BOSCH INJECTION PUMP TEST SPECIFICATIONS	ELECTRICAL TEST
Obsereve notes in remark colum	Actuator Connections 5 and 6
Test sheet : VW	Test temperature:
Date of manufacture:	15°30°C, ohms : 0.41.0 50°70°C, ohms : 0.451.1
Edition : 30.05.1996 Replaces : Test oil : ISO 4113	
Test oil : ISO 4113	Connections 5 and. ground, Mohms min.: 1.0
Injection pump : VE5/11E1850L705	
Type No. : 0 460 415 987	Connections 3 and 5
Customer Ident.No.:	Mohms min. : 1.0 Connections 6 and 7
Customer-specific details	Mohms min. : 1.0
Customer : VW	High-pressure compressor sensor
Engine : 2.5 SDI	Sensor coils
Out with left .	Connections 1 and 2 Ohms : 4.96.5
Output kW : Speed 1/min:	Connections 2 and 3
MESH DENOU DEEDEOUISITES	Ohms : 4.96.5 Connections 1 and 3
TEST BENCH PREREQUISITES	Ohms : 9.813.0
Inlet pressure, bar: 0.300.40	Connections 1 and.
Calibrating nozzle-	ground, Mohms min.: 1.0
holder assembly > : 1 688 901 114	Connections 2 and ground, Mohms min.: 1.0
Opening	Connections 3 and
pressure > bar: 207210	ground, Mohms min.: 1.0
Test pressure line: 1 680 750 085	Temperature sensor, fuel
Outer diameter : 6.00	Connentions 4 and 7 Test temperature:
x wall thickness > : 2.20	15°30°C, kohms : 1.24.0
x length > mm: 350	50°70°C, kohms : 0.31.2
Overflow valve : 2 467 413 018	Connections 4 and
Test line : 0 986 612 444	ground, Mohms min.: 1.0 Connections 7 and
(fuel-delivery	ground Mohms min. : 1.0
actuator) :	Solenoid valve, start of injection
Test line : 1 687 011 208	Connections 1 and 2
<pre>(solenoid valve start of injection): (Test cable set)</pre>	Test temperature : 14.317.3
	50°70°C, ohms : 15.521.0
TEST PRECONDITIONS	Starting stop mV : 41204650
Test oil return temp. > °C	Shutoff stop mV : 650850
with thermometer : 55	
Test oil supply	
temperature > °C : 4247	
Hold-up	1
revolutions >1/min: 1200	
Feedback voltage mV : 2500	

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 200 1st speed Checkbk. volt. mV : 2600 Supply pump pressure: Timing device 1/min: 500 Speed : 8.0...12.0 mm travel Checkbk. volt. : (7.0...13.0) mm > : 2520 mV Setting value, bar: 8.6...8.8 2nd speed 1/min: 1850 Checkbk. volt. mV : 3670 Timing device travel: Timing device Speed 1/min: 500 : 11.8...12.8 travel mm Checkbk. volt : (11.5...13.1) > mm : 2520 mV Setting value, mm : 11.9...12.7 1/min: 1100 3rd speed Checkbk. volt. mV : 1800 Full-load delivery: Timing device 1st temperature-conditioning : max. 0.3 travel mm revolution 1/min: 2000 : (max. 1.0) mm > Checkbk. volt Solenoid valve : 2500 mV Start of Output temperature °C : 61 injection, volts: 12 1/min: 750 Speed 1/min: 500 4.th speed Checkbk. volt Checkbk. volt. mV : 2520 : 2290 mV Timing device Measuring temperature °C travel : 57 mm : (11.5...13.1) Fuel delivery cm3/ > mm 1000s: 31.1...31.5 Overflow at overflow valve: $cm^3/: 2.5$ Dispersion 1000s: 1st temperature-conditioning Test specifications of injection pump revolution 1/min: 100 Checkbk. volt. mV : 2500 Check values in brackets Output temperature °C : 51 Supply pump pressure variations: Speed 1/min : 1850 1/min: 1850 Checkbk. volt. mV : 3670 1st speed Measuring Checkbk. volt temperature °C : 53 : 3670 mV : 139...194 Overflow Supply pump $cm^{3}/10s$: bar : 10.4...11.0 pressure > bar : 1/min: 200 2st speed Checkbk. volt : 2600 Supply pump bar : 4.5...6.5 pressure > bar : >

```
Idle delivery:
Fuel delivery variations:
                                     1st temperature-conditioning
                                     revolution 1/min: 2000
1st temperature-conditioning
                                     Checkbk. volt mV : 2500
revolution 1/min: 100
Checkbk. volt mV : 2500
                                     Output
                                     temperature °C : 61
Output
temperature °C : 51
Speed 1/min : 1850
                                                 1/min : 400
                                     Speed `
                                     Checkbk. volt mV : 1910
                                     Meßtemperatur °C : 57
Checkbk. volt mV : 3670
                                     Fuel delivery cm3/: 13.9...17.9
Meßtemperatur °C : 53
                                                  1000s: (12.9...18.9)
Fuel delivery cm<sup>3</sup>/: 50.2...52.8
            1000s : (49.5...53.5)
                                     Solenoid valve
Dispersion cm<sup>3</sup>/ : 3.0
                                     Start of
                                     injection, volts : 12
            1000s.: (3.0)
                                     Dispersion cm^3/:3.0
                                                  1000s: (4.0)
2nd temperature-conditioning
revolution 1/min : 2000
Checkbk. volt mV : 2500
                                     Starting fuel delivery:
                                     1st temperature-conditioning
Output.
                                     revolution 1/min : 2000
temperature °C
                  : 61
                                     Checkbk. volt mV : 2500
            1/min : 750
Speed
Checkbk. volt mV : 2290
                                     Output
                                     temperature °C
                                                       : 65
Measuring
                                                 1/min : 100
                                     Speed
temperature °C
                   : 57
                                     Checkbk. volt mV : 2690
Fuel delivery cm3/:
                                     Measuring
             1000s: (30.0...32.6)
                                      temperature °C : 61
Dispersion
             cm^3/:
                                      Fuel delivery cm<sup>3</sup>/: 54.0...66.0
             1000s: (2.5)
                                                  1000s: (49.0...71.0)
                                      Solenoid valve
3rd temperature-conditioning
                                      Start of
revolution 1/min: 2000
                                      injection, volts : 12
Checkbk. volt mV : 2500
Output
                                      Stop test:
temperature °C
                  : 61
                                                   1/min: 1000
            1/min : 500
                                      Speed
Speed
                                      Checkbk. volt mV : 2290
Checkbk. volt mV : 2520
                                      ELAB
                                                  volts: 0
Measuring
                                      Fuel delivery cm<sup>3</sup>/:
temperature °C
                  : 57
Fuel delivery cm<sup>3</sup>/: 43.3...45.9
                                                   1000s: 3.0
                                      max.
                                      Start of
             1000s: (42.6...46.6)
             cm^3/:3.0
Dispersion
                                      Shutoff solenoid:
             1000s: (3.0)
   >
                                      Cut-in voltage
                                                         : 10.0
                                      min. > volts
                                      Rated voltage,
                                                   volts: 12.0
                                      High-pressure compressor sensor
                                      Testing only possible with ballast
                                      EPS 910
                                      Take note of test instructions
                                      "Distributor pump for direct
                                      injectors"!
                                      Dimensions for mounting and setting:
                                      Description
                                                         : 3.2...3.4
                                      K
                                                 mm
                                                         : 8.2...8.6
                                      KF
                                                 mm
                                      SVS max.
                                                 mm
                                      FH
                                                 mm
```

TS

: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS	ELECTRICAL TEST
Observee notes in remark colum	Actuator

Test temperature: Test sheet : MB Date of manufacture:

: 01.05.1996 50°...70°C, ohms : 0.45...1.1 Edition

Replaces : ISO 4113 Test oil

Injection pump : VE5/11E1900R685

: 0 460 415 988 Type No.

Customer Ident.No.:

Customer-specific details

Customer : Mercedes-Benz

: OM 602 DELA 29 Engine

Output kW 1/min: Speed

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 116

Opening

pressure > bar: 207...210

Test pressure line: 1 680 750 085

Outer diameter : 6.00 x wall thickness >: 2.20 x length > mm: 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 698

(fuel-delivery

actuator) : (KDEP 1865/10)

Test line : Prüfkabelset

(solenoid valve

start of injection): (1 687 011 208) | 15°...30°C, ohms : 14.3...17.3

TEST PRECONDITIONS

Test oil

return temp. > °C

with thermometer : 55

Test oil supply

temperature > °C : 42...47

Hold-up

revolutions >1/min: 1200

Feedback

voltage mV : 2500 Connections 12 and 13

15°...30°C, ohms : 0.4...1.0

Connections 13 and.

ground, Mohms min.: 1.0

Connections 12 and

ground, Mohms min.: 1.0 Connections 8 and 13

Mohms min.

Connections 12 and 1

Mohms min.

High-pressure compressor sensor

Sensor coils

Connections 8 and 7

Ohms : 4.9...6.5

Connections 6 and 7

: 4.9...6.5 Ohms

Connections 6 and 8

Ohms : 9.8...13.0

Connections 6 and.

ground, Mohms min.: 1.0

Connections 7 and

ground, Mohms min.: 1.0

Connections 8 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 1 and 2

Test temperature:

15°...30°C, kohms : 1.2...4.0

50°...70°C, kohms : 0.3...1.2

Connections 1 and

ground, Mohms min.: 1.0

Connections 2 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature

50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 1900 1st speed Checkbk. volt. mV : 3520 Supply pump pressure: 1/min: 500 Timing device Speed Checkbk. volt. travel mm : 11.8 ... 12.8 : (11.5...13.1) mm : 2550 Setting value, bar: 9.3...9.5 1/min: 200 2nd speed Checkbk. volt. mV : 2550 Timing device Timing device travel: : 3.0...6.0 Speed 1/min: 500 travel mm : (1.3...7.7) Checkbk. volt mm > mV : 2500 1/min: 1500 Setting value, mm : 11.4...12.2 3rd speed Checkbk. volt. mV : 1515 : (11.0...12.6) Timing device Full-load delivery: travel mm : 0...3.5 1st temperature-conditioning mm : > Solenoid valve revolution 1/min: 2000 Checkbk. volt Start of : 2500 injection, volts: 12 mV Output temperature °C 4.th speed 1/min: 1100 Checkbk. volt. mV : 1530 Speed 1/min: 750 Checkbk. volt Timing device : 0...0.5 : 2500 travel mV mm Measuring : (0...0.8) > mm : 57 Start of temperature °C Fuel delivery $cm^3/:50.8...51.2$ injection, volts: 12 1000s: (49.0...53.0) $cm^3/: 2.5$ Overflow at overflow valve: Dispersion 1000s: > 1st temperature-conditioning Test specifications of injection pump revolution 1/min: 100 Check values in brackets Checkbk. volt. mV : 2500 Output temperature °C : 51 Supply pump pressure variations: 1/min : 1900 Speed 1st speed 1/min: 1900 Checkbk. volt. mV : 3570 Checkbk. volt Measuring temperature °C : 53 mV : 3520 : 137...192 Overflow Supply pump pressure > bar : 11.3...11.9 > $cm^3/10s : (123...206)$ > bar : 2st speed 1/min: 200 Checkbk. volt mV: 2550 Supply pump pressure > bar : 4.5...6.5 bar : >

Fuel delivery variations:	Idle delivery:
	1st temperature-conditioning
1st temperature-conditioning	revolution 1/min: 2000
revolution 1/min: 100	Checkbk. volt mV : 2500
Checkbk. volt mV : 2500	Output
	temperature °C : 61
Output	cemperature c . or
temperature °C : 51	Speed 1/min: 340
Speed 1/min : 1900	Checkbk. volt mV : 2000
Checkbk. volt mV : 3520	Meßtemperatur °C : 57
Meßtemperatur °C : 53	Fuel delivery cm ³ /: 13.617.6
Fuel delivery cm ³ /: 64.166.5	> 1000s: (12.618.6)
> 1000s : (62.668.0)	Solenoid Walve
Dispersion cm ³ / : 2.5	Start of
> 1000s.:	injection, volts : 12
> 1000s	Dianovaian and 1 2 0
2211	Dispersion cm ³ /: 3.0 > 1000s: (4.0)
2nd temperature-conditioning	> 1000s: (4.0)
revolution 1/min : 2000	
Checkbk. volt mV : 2500	Starting fuel delivery:
Output	1st temperature-conditioning
temperature °C : 60	revolution 1/min : 2000
Speed 1/min: 1000	Checkbk. volt mV : 2500
Checkbk. volt mV : 3150	Output
Measuring	temperature °C : 65
temperature °C : 56	Speed 1/min: 100
Fuel delivery $cm^3/: 69.772.3$	Checkbk. volt mV : 3060
> 1000s: (69.073.0)	Measuring
Dispersion cm ³ /: 2.5	temperature °C : 61
> 1000s: (4.0)	Fuel delivery cm ³ /: 70.0
20002 (4.0)	> 1000s:
2nd temporature conditioning	Solenoid valve
3rd temperature-conditioning	
revolution 1/min: 2000	Start of
Checkbk. volt mV : 2500	injection, volts : 12
Output	
temperature °C : 61	Stop test:
Speed 1/min : 500	Speed 1/min: 1000
Checkbk. volt mV : 2550	Checkbk. volt mV : 4020
	ELAB volts: 0
Measuring	
temperature °C : 57	Fuel delivery cm ³ /:
Fuel delivery cm ³ /: 58.661.2	max. 1000s: 3.0
> 1000s: (57.961.9)	Start of
Dispersion $cm^3/:3.0$	
> 1000s:	Shutoff solenoid:
	Cut-in voltage
	min. > volts : 10.0
	Rated voltage,
	volts: 12.0
	VOICO . 12.0
	Natara
	Notes:
	High-pressure compressor sensor
	Testing only possible with ballast
	EPS 910
	Take note of test instructions
	"Distributor pump for direct
·	injectors"!
	Dimensions for mounting and settings
	Dimensions for mounting and setting:
	Description
	Description
•	
	K mm :
	KF mm : 8.28.6
	KF mm : 8.28.6 SVS max. mm :
	KF mm : 8.28.6 SVS max. mm : FH mm :
	KF mm : 8.28.6 SVS max. mm :

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST Obsereve notes in remark colum Actuator Connections 12 and 13 Test temperature: Test sheet : MB 15°...30°C, ohms : 0.4...1.0 50°...70°C, ohms : 0.45...1.1 Date of manufacture: : 14.11.1995 : 0.45...1.1 Edition Replaces Connections 13 and. Test oil : ISO 4113 ground, Mohms min.: 1.0 Injection pump : VE5/11E2000R642 Connections 12 and ground, Mohms min.: 1.0 : 0 460 415 991 Connections 8 and 13 Type No. Customer Ident.No.: Mohms min. Connections 12 and 1 Customer-specific details Mohms min. : 1.0 Customer : Mercedes-Benz High-pressure compressor sensor Sensor coils Engine Connections 8 and 7 Output kW Ohms : 4.9...6.5 Connections 6 and 7 1/min: Speed Ohms : 4.9...6.5 Connections 6 and 8 TEST BENCH PREREQUISITES Ohms : 9.8...13.0 Inlet pressure, bar: 0.30...0.40 Connections 6 and. ground, Mohms min.: 1.0 Calibrating nozzleholder assembly > : 1 688 901 116 Connections 7 and ground, Mohms min.: 1.0 Connections 8 and Opening bar: 207...210 ground, Mohms min.: 1.0 pressure > Test pressure line: 1 680 750 085 Temperature sensor, fuel Connentions 1 and 2 Outer diameter : 6.00 Test temperature: 15°...30°C, kohms : 1.2...4.0 x wall thickness >: 2.20 50°...70°C, kohms : 0.3...1.2 x length > mm: 350Overflow valve : 2 467 413 018 Connections 1 and ground, Mohms min.: 1.0 Connections 2 and : 0 986 612 698 Test line (fuel-delivery ground Mohms min. : 1.0 actuator) Solenoid valve, start of injection : Prüfkabelset Connections 1 and 2 Test line (solenoid valve Test temperature start of injection): (1 687 011 208) 15°...30°C, ohms : 14.3...17.3 50°...70°C, ohms : 15.5...21.0 TEST PRECONDITIONS Starting stop mV : 4120...4650 Test oil

mV : 650...850

Shutoff stop

A7

return temp. > °C

Test oil supply

Hold-up

Feedback voltage mV

with thermometer : 55

temperature > °C : 42...47

: 2500

revolutions >1/min: 1200

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 2000 1st speed Checkbk. volt. mV : 3570 Supply pump pressure: Timing device Speed 1/min: 500 : 11.8...12.8 Checkbk. volt. travel mm : (11.6...13.0) : 2620 > mm mV Setting value, bar: 9.3...9.5 1/min: 200 2nd speed : (9.1...9.7) Checkbk. volt. mV : 2620 Timing device Timing device travel: : 8.5...11.5 1/min: 500 travel Speed mm : (7.5...12.5) Checkbk. volt mm : 2620 Setting value, mm : 11.9...12.7 3rd speed 1/min: 2000 Checkbk. volt. mV : 1500 : (11.0...13.6) Timing device : 0...3.5 Full-load delivery: travel mm 1st temperature-conditioning mm Solenoid valve revolution 1/min: 2000 Checkbk. volt Start of : 2500 injection, volts: 12 mV Output 1/min: 1100 temperature °C 4.th speed : 61 Checkbk. volt. mV : 1530 Speed 1/min: 750 Checkbk, volt Timing device : 0...0.6 : 2520 travel mV mm > mm : (0...0.8) Measuring temperature °C : 57 Solenoid valve Fuel delivery cm³/: 51.3...51.7 Start of 1000s: (49.5...53.5) injection. volts: 12 $cm^3/:2.5$ Dispersion 1000s: Overflow at overflow valve: 1st temperature-conditioning Test specifications of injection pump revolution 1/min: 100 Check values in brackets Checkbk. volt. mV : 2500 Output Supply pump pressure variations: temperature °C : 51 1/min: 2000 Speed 1/min : 1900 1st speed Checkbk. volt Checkbk. volt. mV : 3570 : 3570 Measuring mV temperature °C : 53 Supply pump pressure > bar : 11.5...12.1 Overflow : 137...192 bar : (11.3...12.3) $cm^3/10s : (123...206)$ > > 2st speed 1/min: 200 Checkbk. volt mV : 2620 Supply pump bar : 4.5...6.5 pressure > bar : (4.3...6.7)

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Idle delivery:
Fuel delivery variations:
                                     1st temperature-conditioning
                                     revolution 1/min: 2000
1st temperature-conditioning
                                    Checkbk. volt mV : 2500
revolution 1/min: 100
Checkbk. volt mV : 2500
                                    Output
                                     temperature °C : 61
Output
temperature °C
                 : 51
                                                1/min : 340
                                     Speed
                                     Checkbk. volt mV : 2000
           1/min : 2000
Speed
Checkbk. volt mV : 3570 Meßtemperatur °C : 53
                                     Meßtemperatur °C : 57
                                     Fuel delivery cm3/: 13.0...18.0
Fuel delivery cm<sup>3</sup>/: 66.8...69.2
                                                1000s:
                                       >
                                     Solenoid valve
           1000s : (65.3...70.7)
Dispersion cm<sup>3</sup>/ : 2.5
                                     Start of
            1000s.:
                                     injection, volts : 12
   >
                                     Dispersion cm<sup>3</sup>/: 3.0
                                                 1000s: (4.0)
2nd temperature-conditioning
                                       >
revolution 1/min : 2000
Checkbk. volt mV : 2500
                                     Starting fuel delivery:
Output
                                     1st temperature-conditioning
temperature °C : 60
                                     revolution 1/min : 2000
                                     Checkbk. volt mV : 2500
            1/min : 1000
Speed
Checkbk. volt mV : 3080
                                     Output
                                     temperature °C : 65
Measuring
temperature °C : 56
                                                1/min : 100
                                     Speed
Fuel delivery cm<sup>3</sup>/: 69.3...71.9
                                     Checkbk. volt mV : 3110
            1000s: (68.6...72.6)
                                     Measuring
                                     temperature °C : 61
Dispersion cm^3/:4.0
                                     Fuel delivery cm3/: 75.6
             1000s:
                                                 1000s:
                                     Solenoid valve
3rd temperature-conditioning
                                     Start of
revolution 1/min: 2000
Checkbk. volt mV : 2500
                                     injection, volts : 12
Output
temperature °C : 61
                                     Stop test:
            1/min : 500
                                                  1/min: 1000
Speed
                                     Speed
Checkbk. volt mV : 2620
                                     Checkbk. volt mV : 4000
Measuring
                                     ELAB
                                                 volts: 0
temperature °C : 57
                                     Fuel delivery cm3/:
Fuel delivery cm<sup>3</sup>/: 62.7...65.3
                                                 1000s: 3.0
                                     max.
             1000s: (62.0...66.0)
                                     Start of
Dispersion
             cm^3/:
                                     Shutoff solenoid:
             1000s:
                                     Cut-in voltage
                                     min.> volts
                                                       : 10.0
                                     Rated voltage,
                                                  volts: 12.0
                                     Notes:
                                     High-pressure compressor sensor
                                     Testing only possible with ballast
                                     EPS 910
                                     Take note of test instructions
                                     "Distributor pump for direct
                                     injectors"!
                                     Dimensions for mounting and setting:
                                     Description
                                     K
                                               mm
                                     KF
                                                       : 8.2...8.6
                                                mm
                                     SVS max.
                                               mm
                                     FH
                                               mm
```

TS

: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST Obsereve notes in remark colum Actuator Connections 4 and 7 : Audi Test temperature: Test sheet Date of manufacture: 15°...30°C, ohms : 0.4...1.0 : 30.05.1994 50°...70°C, ohms : 0.45...1.1 Edition Replaces Test oil Connections 4 and. : ISO 4113 ground, Mohms min.: 1.0 Connections 7 and Injection pump : VE5/11E2300L460-1 ground, Mohms min.: 1.0 Connections 2 and 7 : 0 460 415 994 Type No. Customer Ident.No.: Mohms min. : 1.0 Connections 4 and 6 Mohms min. : 1.0 Customer-specific details Customer High-pressure compressor sensor Sensor coils : 180-02-TDI-C4 Engine Connections 1 and 3 Output kW Ohms : 4.9...6.5 1/min : Connections 2 and 3 Speed : 4.9...6.5 Ohms Connections 1 and 2 TEST BENCH PREREQUISITES Ohms : 9.8...13.0 Inlet pressure, bar: 0.30...0.40 Connections 1 and. Calibrating nozzleground, Mohms min.: 1.0 Connections 2 and holder assembly > : 1 688 901 114 ground, Mohms min.: 1.0 Connections 3 and Opening bar: 207...210 ground, Mohms min.: 1.0 pressure > Test pressure line: 1 680 750 085 Temperature sensor, fuel Connentions 5 and 6 Test temperature: Outer diameter : 6.00 15°...30°C, kohms : 1.2...4.0 50°...70°C, kohms : 0.3...1.2 x wall thickness > : 2.20 x length > mm: 350 Overflow valve : 2 467 413 009 Connections 5 and ground, Mohms min.: 1.0 : 0 986 612 440 Connections 6 and Test line ground Mohms min. : 1.0 (fuel-delivery actuator) Solenoid valve, start of injection : 0 986 612 435 Connections 1 and 2 Test line Test temperature : Solenoid valve 15°...30°C, ohms : 14.3...17.3 start of injection): 50°...70°C, ohms : 15.5...21.0 TEST PRECONDITIONS Starting stop mV : 4120...4650 Test oil mV: 650...850 Shutoff stop return temp. > °C with thermometer : 55 Test oil supply temperature > °C : 42...47 Hold-up revolutions >1/min: 1200 Feedback

voltage mV

: 2500

Setting values of injection pump Timing device variations: Check values in brackets 1st speed 1/min: 500 Checkbk. volt. mV : 3900 Supply pump pressure: Speed 1/min: 750 Timing device Checkbk. volt. : 7.5...9.9 travel mm > mV : 3900 mm : (7.2...10.2) Setting value, bar: 6.0...7.0 2nd speed 1/min: 750 Timing device travel: Checkbk. volt. mV : 3900 Speed 1/min: 750 Timing device Checkbk. volt travel mm mV : 3900 > mm : (7.5...11.3)Setting value, mm : 9.3...9.5 1/min: 1200 3rd speed Full-load delivery: Checkbk. volt. mV : 1800 1st temperature-conditioning Timing device travel : max. 0.3 revolution 1/min: 2125 mm Checkbk. volt : (max. 2.5)> mm mV : 2500 Solenoid valve Output Start of temperature °C : 61 injection, volts: 12 Speed 1/min: 750 Checkbk. volt 4.th speed 1/min: 2125 mV : 2460 Checkbk. volt. mV : 3900 Measuring Timing device : 11.6...12.6 temperature °C : 57 travel mm Fuel delivery cm³/ mm : (11.5...12.7) 1000s: 40.8...41.2 $cm^3/:2.5$ Overflow at overflow valve: Dispersion 1000s: > 1st temperature-conditioning Test specifications of injection pump revolution 1/min: 100 Checkbk. volt. mV : 2500 Check values in brackets Output temperature °C Supply pump pressure variations: Speed 1/min : 2125 1st speed 1/min : 2125 Checkbk. volt. mV : 3900 Checkbk. volt Measuring mV : 3900 temperature °C : 53 Overflow Supply pump : 97...180 bar : 7.9...8.9 $cm^{3}/10s$: pressure > >

bar :

Fuel delivery variations:	Idle delivery:
1st temperature-conditioning	1st temperature-conditioning
revolution 1/min: 100	revolution 1/min: 2125
Checkbk. volt mV : 2500	Checkbk. volt mV : 2500
Output	Output
temperature °C : 51	temperature °C : 61
Speed 1/min : 2125	Speed 1/min: 500
Checkbk. volt mV : 3910	Checkbk. volt mV : 1520
Meßtemperatur °C : 53	Meßtemperatur °C : 57
Fuel delivery cm3/: 55.758.3	Fuel delivery cm ³ /: 10.213.5
> 1000s : (55.059.0)	> 1000s: (9.215.2)
Dispersion cm ³ / : 3.0	Solenoid valve
> 1000s.:	Start of
	injection, volts : 12
2nd temperature-conditioning	Dispersion cm ³ /: 3.0 > 1000s: (4.0)
revolution 1/min : 2125	> 1000s: (4.0)
Checkbk. volt mV : 2500	
Output	Starting fuel delivery:
temperature °C : 60	
Speed 1/min: 1000	1st temperature-conditioning
Checkbk. volt mV : 3210	revolution 1/min : 2125
Measuring	Checkbk. volt mV : 2500
temperature °C : 56	Output
Fuel delivery cm ³ /: 56.859.4	temperature °C : 65
> 1000s: (56.160.1)	Speed 1/min: 100
Dispersion cm ³ / . 3.0	Checkbk. volt mV : 2960
> 1000s:	Measuring
	temperature °C : 61
3rd temperature-conditioning	Fuel delivery cm ³ /: 79.0
revolution 1/min: 2125	> 1000s:
Checkbk. volt mV : 2500	Solenoid valve
Output	Start of
temperature °C : 61	injection, volts : 12
Speed 1/min: 750 Checkbk. volt mV: 2460	Cton toots
Measuring	Stop test:
temperature °C : 57	Speed 1/min: 1500
Fuel delivery cm ³ /:	Checkbk. volt mV : 4125
> 1000s: (39.742.3)	ELAB volts: 0
Dispersion cm ³ /:	Fuel delivery cm ³ /:
> 1000s:	max. 1000s: 3.0
10005	Solenoid valve
4th temperature-conditioning	Start of
revolution 1/min: 2125	injection, volts : 12
Checkbk. volt mV : 2500	1,,
Output	Shutoff solenoid:
temperature °C : 61	Cut-in voltage
Speed 1/min: 500	min. > volts : 10.0
Checkbk. volt mV : 2320	Rated voltage,
Measuring	volts: 12.0
temperature °C : 57	
Fuel delivery cm^3 : 41.944.5	
> 1000s: (41.245.2)	
Dispersion cm ³ /: 3.0	
> 1000s:	1

Notes:

High-pressure compressor sensor Testing only possible with ballast EPS 910

Take note of test instructions "Distributor pump for direct injectors"!

Dimensions for mounting and setting:

Description

K mm : 2.7...2.9 KF mm : 6.5...6.9

SVS max. mm FH mm

TS : 1 467 010 494

Obsereve notes in remark colum

Test sheet : MB

Date of manufacture:

: 05.07.1994 Edition

Replaces

Test oil : ISO 4113

: VE5/11E1900R595 | Connections 12 and Injection pump

: 0 460 415 995 Type No.

Customer Ident.No.:

Customer-specific details

: Mercedes-Benz Customer

Engine : OM 602 DELA 29

kW Output Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 116

Opening

pressure > bar : 207...210

Test pressure line: 1 680 750 085

Outer diameter : 6.00 x wall thickness >: 2.20 x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 698

(fuel-delivery

actuator)

: Prüfkabelset Test line

(solenoid valve

start of injection): (1 687 011 208)

TEST PRECONDITIONS

Test oil

return temp. > °C

with thermometer : 55

Test oil supply

temperature > °C : 42...47

Hold-up

revolutions >1/min: 1200

Feedback

voltage mV : 2500

Actuator

Connections 12 and 13

Test temperature:

15°...30°C, ohms : 0.4...1.0 : 0.45...1.1 50°...70°C, ohms

Connections 13 and.

ground, Mohms min.: 1.0

ground, Mohms min.: 1.0

Connections 8 and 13

Mohms min.

Connections 12 and 1

: 1.0 Mohms min.

High-pressure compressor sensor

Sensor coils

Connections 8 and 7

Ohms : 4.9...6.5

Connections 6 and 7

: 4.9...6.5 Ohms

Connections 6 and 8

: 9.8...13.0 Ohms

Connections 6 and.

ground, Mohms min.: 1.0

Connections 7 and

ground, Mohms min.: 1.0

Connections 8 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 1 and 2

Test temperature:

15°...30°C, kohms : 1.2...4.0 50°...70°C, kohms : 0.3...1.2

Connections 4 and

ground, Mohms min.: 1.0

Connections 7 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2 Test temperature

15°...30°C, ohms : 14.3...17.3 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV: 650...850 Setting values of injection pump Check values in brackets Supply pump pressure: 1/min: 500 Speed Checkbk. volt. mV : 2430 Setting value, bar: 7.1...7.3 Timing device travel: Speed 1/min: 500 Checkbk. volt : 2430 Setting value, mm : 11.6...12.6 : (10.8...13.4)Full-load delivery: 1st temperature-conditioning 1/min: 2000 revolution Checkbk. volt : 2500 mV Output temperature °C : 61 1/min: 750 Speed Checkbk. volt : 2360 mV Measuring temperature °C : 57 Fuel delivery cm3/: 43.3...43.7 1000s: (41.7...45.3) $cm^3/:2.5$ Dispersion 1000s: 7 Test specifications of injection pump Check values in brackets Supply pump pressure variations: 1/min: 1900 1st speed Checkbk. volt : 3530 mV Supply pump bar : 9.0...9.6 pressure > bar :

1/min: 200

bar :

: 2430

bar : 4.9...6.9

1st speed 1/min: 1900 Checkbk. volt. mV : 3530 Timing device : 11.8...12.8 travel : (11.5...13.1) mm 2nd speed 1/min: 200 Checkbk. volt. mV : 2430 Timing device : 8.0...11.0 travel mm : (7.0...12.0) > mm 1/min: 1000 3rd speed Checkbk. volt. mV : 1460 Timing device travel : max. 0.5 mm mm > Solenoid valve Start of injection, volts: 12 Overflow at overflow valve: 1st temperature-conditioning revolution 1/min: 100 Checkbk. volt. mV : 2500 Output temperature °C : 51 1/min : 1900 Speed Checkbk. volt. mV : 3530 Measuring temperature °C : 53 : 111...167 Overflow $cm^3/10s : (83...194)$

Timing device variations:

2st speed

Supply pump

pressure >

mV

Checkbk. volt

Fuel delivery variations:	Idle delivery:
	1st temperature-conditioning
1st temperature-conditioning	revolution 1/min: 2000
revolution 1/min: 100	Checkbk. volt mV : 2500
Checkbk. volt mV : 2500	Output
Output	temperature °C : 61
temperature °C : 51	Speed 1/min: 340
Speed 1/min : 1900	Checkbk. volt mV : 1860
Checkbk. volt mV : 3530	Meßtemperatur °C : 57
Meßtemperatur °C : 53	Fuel delivery cm ³ /: 13.017.0
Fuel delivery cm ³ /: 63.867.8	> 1000s: (12.018.0)
> 1000s : (62.668.0)	Solenoid valve
Dispersion cm ³ / : 2.5	Start of
> 1000s.:	injection, volts : 12
	Dispersion cm ³ /: 3.0
2nd temperature-conditioning	> 1000s: (4.0)
revolution 1/min : 2000	
Checkbk. volt mV : 2500	Starting fuel delivery:
Output	1st temperature-conditioning
temperature °C : 60	revolution 1/min : 2000
Speed 1/min : 1000	Checkbk. volt mV : 2500
Checkbk. volt mV : 3120	Output
Measuring	temperature °C : 65
temperature °C : 56	Speed 1/min: 100
Fuel delivery cm ³ /: 69.572.1	Checkbk. volt mV : 2880
> 1000s: (68.872.8)	Measuring
Dispersion cm ³ / : 2.5	temperature °C : 61
> 1000s: (4.0)	Fuel delivery cm ³ /: 65.079.0
	> 1000s: (61.083.0)
3rd temperature-conditioning	Solenoid valve
revolution 1/min: 2000	Start of
Checkbk. volt mV : 2500	injection, volts : 12
Output	
temperature °C : 61	Stop test:
Speed 1/min: 500	Speed 1/min: 1000
Checkbk. volt mV : 2430	Checkbk. volt mV : 4020
Measuring	ELAB volts: 0
temperature °C : 57	Fuel delivery cm ³ /:
Fuel delivery cm ³ /: 53.756.3	max. 1000s: 3.0
> 1000s: (53.057.0)	Start of
Dispersion cm ³ / : 3.0	
> 1000s:	Shutoff solenoid:
	Cut-in voltage
	min.> volts : 10.0
	Rated voltage,
	volts: 12.0
	Notes:
	High-pressure compressor sensor
	Testing only possible with ballast
	EPS 910
	Take note of test instructions
	"Distributor pump for direct
	injectors"!
	Dimensions for mounting and setting:
	Description
	Description K mm :
	SVS max. mm : FH mm :
	TS : 1 467 010 495
	1 407 010 493

BOSCH INJECTION PUMP TEST SPE	CIFICATIONS ELECTRICAL TEST	
Obsereve notes in remark c	olum Actuator Connections 5 and 6	5
Test sheet : VW Date of manufacture: Edition : 12.06. Replaces : Test oil : ISO 42	Test temperature: 15°30°C, ohms	: 0.41.0
Test oil : ISO 43	Connections 5 and. ground, Mohms min.	: 1.0
Injection pump : VE5/13	Connections 6 and ground, Mohms min.	: 1.0
Type No. : 0 460 Customer Ident.No.:	Mohms min.	: 1.0
Customer-specific details Customer : VW		: 1.0
Engine : 2.5 TI	High-pressure compa Sensor coils Connections 1 and 2	·
Output kW: Speed 1/min:	Ohms Connections 2 and 3	: 4.96.5
TEST BENCH PREREQUISITES	Connections 1 and 3	
Inlet pressure, bar: 0.30	Connections 1 and.	
Calibrating nozzle- holder assembly > : 1 688	ground, Mohms min. Connections 2 and ground, Mohms min.	
Opening pressure > bar: 207	Connections 3 and	
Test pressure line: 1 680	750 085 Temperature sensor Connentions 4 and	
Outer diameter : 6.00	Test temperature:	. 1 2 4 0
x wall thickness >: 2.20 x length > mm: 350	15°30°C, kohms 50°70°C, kohms	: 0.31.2
Overflow valve : 2 467	413 018 Connections 4 and ground, Mohms min.	: 1.0
Test line : 0 986 (fuel-delivery	612 439 Connections 7 and ground Mohms min.	• 1 0
	1865/10)	
Test line : 0 986 (solenoid valve	Solenoid valve, sta 611 983 Connections 1 and 3 Test temperature	
start of injection): (KDEP		
TEST PRECONDITIONS	Starting stop mV	: 41204650
Test oil return temp. > °C with thermometer : 55	Shutoff stop mV	
Test oil supply temperature > °C : 42	47	
Hold-up revolutions >1/min: 1200 Feedback		
voltage mV : 2500		

Setting values of injection pump Timing device variations: Check values in brackets 1st speed 1/min: 500 Checkbk. volt. mV : 3900 Supply pump pressure: 1/min: 750 Timing device Speed : 6.6...9.0 Checkbk. volt. travel mm : 3900 : (6.3...9.3) mm Setting value, bar: 6.0...7.0 2nd speed 1/min: 1750 Checkbk. volt. mV : 3670 Timing device travel: Speed 1/min: 750 Timing device : 11.6...12.6 Checkbk. volt travel mm : (11.5...12.7) mV : 3900 > mm Setting value, mm : 8.5...8.7 3rd speed 1/min: 1200 Checkbk. volt. mV : 1800 Full-load delivery: 1st temperature-conditioning Timing device revolution 1/min: 2000 travel : max. 0.3 mm : (max. 2.5)Checkbk. volt mm : 2500 Solenoid valve mV Start of Output temperature °C injection, volts: 12 : 61 Speed 1/min: 750 Checkbk. volt 4.th speed 1/min: 750 Checkbk. volt. mV : 3900 mV : 2400 Timing device Measuring : 57 temperature °C travel mm : (7.4...9.8) Fuel delivery cm3/ > mm 1000s: 36.4...36.8 $cm^3/:2.5$ Overflow at overflow valve: Dispersion 1000s: 1st temperature-conditioning revolution 1/min: 100 Test specifications of injection pump Checkbk. volt. mV : 2500 Check values in brackets Output temperature °C Supply pump pressure variations: 1/min : 1750 Speed 1st speed 1/min: 1750 Checkbk. volt. mV : 3670 Checkbk. volt Measuring temperature °C : 53 mV : 3670 Overflow : 97...208 Supply pump $cm^{3}/10s$: bar : 7.4...8.4

pressure >

>

bar :

Fuel delivery variations:	5th temperature-conditioning
	revolution 1/min: 2000
1st temperature-conditioning	Checkbk. volt mV : 2500
revolution 1/min: 100	Output temperature °C : 61
Checkbk. volt mV : 2500	
Output	Speed 1/min : 500
temperature °C : 51	Checkbk. volt mV : 2320
Speed 1/min : 1750	Measuring
Checkbk. volt mV : 3670	temperature °C : 57
Meßtemperatur °C : 53	Fuel delivery cm ³ /: 39.542.1
Fuel delivery cm ³ /: 52.354.9	> 1000s: (38.842.8)
> 1000s : (51.655.6)	Dispersion cm ³ /: 3.0
Dispersion cm ³ / : 3.0	> 1000s: (3.0)
> 1000s.: (3.0)	T 33 - 3 - 3 - 3
	Idle delivery:
2nd temperature-conditioning	1st temperature-conditioning
revolution 1/min: 100	revolution 1/min: 2000
Checkbk. volt mV : 2500	Checkbk, volt mV : 2500
Output	Output
temperature °C : 51	temperature °C : 61
Speed 1/min: 1500	Speed 1/min: 500
Checkbk. volt mV : 3730	Checkbk. volt mV : 1520
Measuring	Meßtemperatur °C : 57
temperature °C : 53	Fuel delivery cm ³ /: 6.910.9
Fuel delivery cm ³ /: 59.262.2	> 1000s: (6.911.9)
> 1000s: (57.963.5)	Solenoid valve
Dispersion cm ³ /: 3.5	Start of
> 1000s: (3.5)	injection, volts : 12
	Dispersion cm ³ /: 3.0
3rd temperature-conditioning	> 1000s: (4.0)
revolution 1/min: 100	
Checkbk. volt mV : 2500	Starting fuel delivery:
Output	1st temperature-conditioning
temperature °C : 51	revolution 1/min : 2000
Speed 1/min : 1000	Checkbk. volt mV : 2500
Checkbk. volt mV : 3210	Output
Measuring	temperature °C : 65
temperature °C : 53	Speed 1/min : 100
Fuel delivery cm ³ /: 55.958.5	Checkbk. volt mV : 2960
> 1000s: (55.259.2)	Measuring
Dispersion cm ³ /: 2.0	temperature °C : 61
> 1000s: (2.5)	Fuel delivery cm ³ /: 74.086.0
	> 1000s: (69.091.0)
4th temperature-conditioning	Solenoid valve
revolution 1/min: 2000	Start of
Checkbk. volt mV : 2500	injection, volts : 12
Output	Stan tanta
temperature °C : 61	Stop test:
Speed 1/min: 750	Speed 1/min: 1000
Checkbk. volt mV : 2400	Checkbk. volt mV : 2460
Measuring	ELAB volts: 0
temperature °C : 57	Fuel delivery cm ³ /:
Fuel delivery cm ³ /:	max. 1000s: 5.0
> 1000s: (35.337.9)	Gnood 1/min : 1500
Dispersion cm ³ /:	Speed 1/min: 1500
> 1000s: (2.5)	Checkbk. volt mV : 4100
	ELAB volts: 0
	Fuel delivery cm ³ /:
	max. 1000s: 3.0
	Solenoid valve Start of
	injection, volts : 12
	injection, voits . 12

Shutoff solenoid: Cut-in voltage

min.> volts : 10.0

Rated voltage,

volts: 12.0

Notes:

High-pressure compressor sensor Testing only possible with ballast EPS 910

Take note of test instructions "Distributor pump for direct injectors"!

Dimensions for mounting and setting:

Description

K mm : 2.7...2.9 KF mm : 6.5...6.9

SVS max. mm

FH mm

TS : 1 467 010 494

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST Obsereve notes in remark colum Actuator Connections 4 and 7 Test temperature: : Volvo PENTA Test sheet 15°...30°C, ohms : 0.4...1.0 Date of manufacture: : 0.45...1.1 50°...70°C, ohms Edition : 21,04.1997 Replaces Connections 4 and. Test oil : ISO 4113 ground, Mohms min.: 1.0 Connections 7 and Injection pump : VE6/12E1900L749 ground, Mohms min.: 1.0 Connections 2 and 7 : 0 460 426 998 Type No. : 1.0 Mohms min. Customer Ident.No.: Connections 4 and 6 Mohms min. : 1.0 Customer-specific details : VOLVO PENTA Customer High-pressure compressor sensor : KAD 43 Sensor coils Engine Connections 1 and 3 : 4.9...6.5 Ohms Output kW Connections 2 and 3 1/min: Speed Ohms : 4.9...6.5 Connections 1 and 2 TEST BENCH PREREOUISITES : 9.8...13.0 Ohms Inlet pressure, bar: 0.30...0.40 Connections 1 and. ground, Mohms min.: 1.0 Calibrating nozzle-Connections 2 and holder assembly > : 1 688 901 116 ground, Mohms min.: 1.0 Connections 3 and Opening ground, Mohms min.: 1.0 bar: 207...210 pressure > Test pressure line: 1 680 750 085 Temperature sensor, fuel Connentions 5 and 6 Outer diameter : 6.00 Test temperature: 15°...30°C, kohms : 1.2...4.0 50°...70°C, kohms : 0.3...1,2 x wall thickness >: 2.20 . > mm: 350 x length Connections 5 and Overflow valve ground, Mohms min.: 1.0 : 0 986 612 442 Connections 6 and Test line ground Mohms min. : 1.0 (fuel-delivery actuator) Solenoid valve, start of injection : 1 687 011 208 Connections 1 and 2 Test line

(solenoid valve Test temperature : start of injection): (Test cable set) 15°...30°C, ohms : 14.3...17.3

Shutoff stop mV : 650...850

50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Setting values of injection pump Check values in brackets

Supply pump pressure: Speed 1/min: 800

Checkbk. volt.

mV : 2610

Setting value, bar: 7.2...7.4

Timing device travel:
Speed 1/min: 800

Checkbk. volt

mV : 2610

Setting value, mm : 7.7...8.7

Full-load delivery:

speed 1/min : 800

Checkbk. volt

mV : 2610

Fuel delivery cm³/

> 1000s: 64.2...64.6

Dispersion cm³/: 5.0 1000s:

Test specifications of injection pump Check values in brackets

Supply pump pressure variations:

1st speed 1/min: 1900

Checkbk. volt

mV : 3500

Supply pump

pressure > bar : 7.9...8.9

> bar:

2st speed 1/min: 500

Checkbk. volt

mV : 2730

Supply pump

pressure > bar : 5.5...7.9

> bar :

Timing device variations:

1st speed 1/min: 200 Checkbk. volt. mV: 2500

Timing device

travel mm : 5.9...9.9 > mm : (5.4...10.4)

2nd speed 1/min: 800 Checkbk. volt. mV: 2610

Timing device

travel mm :

> mm : (7.5...8.9)

3rd speed 1/min: 1000 Checkbk. volt. mV: 1660

Timing device

travel mm : max. 0.6 mm : (max. 0.8)

Solenoid valve

Start of

injection, volts: 12

4.th speed 1/min: 200 Checkbk. volt. mV: 2500

Timing device

travel mm : 5.9...9.9 > mm : (5.4...10.4)

Overflow at overflow valve:

speed 1/min : 1900 Checkbk. volt. mV : 3500

Overflow : 83...167

 $> cm^3/10s:$

```
Fuel delivery variations:
```

```
1/min : 1900
1<sup>st</sup> Speed
Checkbk. volt mV : 3500
Fuel delivery cm<sup>3</sup>/: 78.7...82.3
            1000s : (77.0...84.0)
Dispersion cm<sup>3</sup>/
  >
            1000s.:
1nd Speed
              1/min: 800
Checkbk. volt mV : 2610
Fuel delivery cm3/:
              1000s: (61.9...66.9)
Dispersion
              cm^3 :
   >
              1000s: (5.9)
              1/min: 500
3rd Speed
Checkbk. volt mV : 2730
Fuel delivery cm^3/: 80.2...83.2
              1000s: (78.7...84.7)
   >
              cm^3/:
Dispersion
              1000s:
   >
```

```
Idle delivery:
```

1/min: 400 Speed Checkbk. volt mV : 1900 Fuel delivery cm^3 /: 18.2...24.2 1000s: (16.2...26.2) > Solenoid valve Start of injection, volts : 12 Dispersion $cm^3/:5.0$ 1000s: (5.0) > Starting fuel delivery: 1/min: 100 Speed Checkbk. volt mV : 2830 Fuel delivery $cm^3/:60.0...82.0$ 1000s: (51.0...91.0)

Stop test:

Start of

Solenoid valve

injection, volts : 12

Speed 1/min: 1600 Checkbk. volt mV: 4000 ELAB volts: 0 Fuel delivery cm³/:

max. 1000s: (max. 3.0)

Shutoff solenoid:

Cut-in voltage

min.> volts : 10,0

Rated voltage,

volts: 12,0

Dimensions for mounting and setting:

Description

K mm : 2.7...2.9

KF mm : 8.2...8.6

SVS max. mm :

FH mm :

TS : 1 467 010 495

Obsereve notes in remark colum

: VM Test sheet

Date of manufacture:

: 16.12.1996 Edition

Replaces

: ISO 4113 Test oil

Injection pump : VE6/12E1900L719

: 0 460 426 999 Type No.

Customer Ident.No.:

Customer-specific details

Customer : VM-Motori

Engine : D 706 LIM

kW Output 1/min: Speed

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 116

Opening

pressure > bar: 207...210

Test pressure line: 1 680 750 085

Outer diameter : 6.00 x wall thickness >: 2.20 x length > mm: 350

Overflow valve : 2 467 413 018

: 0 986 612 442 Test line

(fuel-delivery

actuator)

Test line : 1 687 011 208

(solenoid valve

start of injection): (Test cable set)

TEST PRECONDITIONS

Test oil

return temp. > °C

with thermometer : 55

Test oil supply

temperature > °C : 42...47

Hold-up

revolutions >1/min: 1200

Feedback

voltage mV : 2500

Actuator

Connections 4 and 7 Test temperature:

15°...30°C, ohms : 0.4...1.0 50°...70°C, ohms : 0.45...1. : 0.45...1.1

Connections 4 and.

ground, Mohms min.: 1.0

Connections 7 and

ground, Mohms min. : 1.0

Connections 2 and 7

Mohms min.

Connections 4 and 6

Mohms min. : 1.0

High-pressure compressor sensor

Sensor coils

Connections 1 and 3

Ohms : 4.9...6.5

Connections 2 and 3

Ohms : 4.9...6.5

Connections 1 and 2

Ohms : 9.8...13.0

Connections 1 and.

ground, Mohms min.: 1.0

Connections 2 and

ground, Mohms min.: 1.0

Connections 3 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 5 and 6

Test temperature:

15°...30°C, kohms : 1.2...4.0

50°...70°C, kohms : 0.3...1.2

Connections 5 and

ground, Mohms min.: 1.0

Connections 6 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature :

15°...30°C, ohms : 14.3...17.3

50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV: 650...850

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 200 1st speed Checkbk. volt. mV : 2230 Supply pump pressure: Speed 1/min: 950 Timing device : 7.0...10.0 travel mm Checkbk. volt. : (6.3...10.7) mm : 3250 Setting value, bar: 7.7...7.9 2nd speed 1/min: 1900 Checkbk. volt. mV : 3780 Timing device travel: Timing device 1/min: 950 Speed : 9.1...10.5 mm travel Checkbk. volt : (9.0...10.6) > mm : 3250 mV Setting value, mm : 9.3...10.3 1/min: 950 3rd speed Checkbk. volt. mV : 1365 Full-load delivery: 1st temperature-conditioning Timing device : max. 0.4 travel mm revolution 1/min: 2000 : (max. 0.5)mm > Checkbk. volt Solenoid valve : 2500 mV Start of Output temperature °C : 61 injection, volts: 12 Speed 1/min: 750 4.th speed 1/min: 950 Checkbk. volt Checkbk. volt. mV : 3250 : 1940 mV Timing device Measuring travel mm temperature °C : 57 : (9.0...10.6) mm Fuel delivery cm3/ > 1000s: 36.5...36.9 > Overflow at overflow valve: $cm^3/: 3.0$ Dispersion 1000s: > 1st temperature-conditioning revolution 1/min: 100 Test specifications of injection pump Checkbk. volt. mV : 2500 Check values in brackets Output Supply pump pressure variations: temperature °C : 51 1/min : 1900 Speed Checkbk. volt. mV : 3780 1/min: 1900 1st speed Measuring Checkbk. volt temperature °C : 53 : 3780 mV Overflow : 83...194 Supply pump $cm^3/10s$: bar : 8.2...9.6 pressure > bar : 2st speed 1/min: 200 Checkbk. volt : 2230 Supply pump pressure > bar : 4.9...7.3

bar :

>

Fuel delivery variations:	Idle delivery:
	1st temperature-conditioning
1st temperature-conditioning	revolution 1/min: 2000
revolution 1/min: 100	Checkbk. volt mV : 2500
Checkbk. volt mV : 2500	Output
Output	temperature °C : 61
temperature °C : 51	Speed 1/min: 400
Speed 1/min : 1900	Checkbk. volt mV : 1630
Checkbk. volt mV : 3780	Meßtemperatur °C : 57
Meßtemperatur °C : 53	Fuel delivery cm ³ /: 5.010.0
Fuel delivery cm ³ /: 88.993.9	> 1000s: (4.511.0)
> 1000s : (88.494.4)	Solenoid valve
> 10005 : (00.494.4)	Start of
Dispersion cm ³ /:	injection, volts : 12
> 1000s.:	Dispersion cm ³ /: 3.0
	1000 (0.0)
2nd temperature-conditioning	> 1000s: (3.0)
revolution 1/min : 2000	about the final delivery
Checkbk. volt mV : 2500	Starting fuel delivery:
Output	1st temperature-conditioning
temperature °C : 61	revolution 1/min : 2000
Speed 1/min: 750	Checkbk. volt mV : 2500
Checkbk. volt mV : 1940	Output
Measuring	temperature °C : 65
temperature °C : 57	Speed 1/min: 100
Fuel delivery cm ³ /:	Checkbk. volt mV : 2760
> 1000s: (35.238.2)	Measuring
Dispersion cm ³ /:	temperature °C : 61
> 1000s: (3.0)	Fuel delivery cm ³ /: 68.088.0
> 10005 : (3.0)	> 1000s: (6ö.090.0)
	Solenoid valve
3rd temperature-conditioning	
revolution 1/min: 2000	Start of
Checkbk. volt mV : 2500	injection, volts : 12
Output	
temperature °C : 61	Stop test:
Speed 1/min: 500	Speed 1/min: 1600
Checkbk. volt mV : 2230	Checkbk. volt mV : 4100
Measuring	ELAB volts: 0
temperature °C : 57	Fuel delivery cm ³ /:
Fuel delivery cm ³ /: 56.860.8	max. 1000s: 3.0
> 1000s: (56.361.3)	Start of
Dispersion cm ³ /:	
	Shutoff solenoid:
> 1000s:	Cut-in voltage
	min.> volts : 10.0
	Rated voltage,
	volts: 12.0
	VOICS . 12.0
	Notes:
	High-pressure compressor sensor
	Testing only possible with ballast
	EPS 910
	Take note of test instructions
	"Distributor pump for direct
	injectors"!
	Dimensions for mounting and setting:
	Description
	K mm : 2.72.9
	KF mm : 8.28.6
	SVS max. mm :
	FH mm :
	TS : 1 467 010 495

Obsereve notes in remark colum

: BMW Test sheet

Date of manufacture:

Edition : 13.01.1997

Replaces

: ISO 4113 Test oil

Injection pump : VE4/9E2200R576

: 0 460 494 995 Type No.

Customer Ident.No.:

Customer-specific details Customer

Engine : M41

Output kW Speed 1/min:

TEST BENCH PREREOUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 022

Opening

bar: 130...133 pressure >

Test pressure line: 1 680 750 073

Outer diameter : 6.00 x wall thickness >: 2.00 > mm: 450 x length

Overflow valve

: 0 986 612 443 Test line

(fuel-delivery actuator)

: 1 687 011 208 Test line

(solenoid valve

start of injection): (Test cable set)

Actuator Connections 5 and 6 Test temperature:

15°...30°C, ohms : 0.4...1.0 50°...70°C, ohms : 0.45...1.3 : 0.45...1.1

Connections 6 and.

ground, Mohms min.: 1.0

Connections 5 and

ground, Mohms min.: 1.0

Connections 3 and 5

: 1.0 Mohms min.

Connections 6 and 7

Mohms min. : 1.0

High-pressure compressor sensor

Sensor coils Connections 1 and 2

: 4.9...6.5 kohms

Connections 2 and 3

kohms : 4.9...6.5

Connections 1 and 3

: 9.8...13.0 kohms

Connections 1 and.

ground, Mohms min.: 1.0

Connections 2 and

ground, Mohms min.: 1.0

Connections 3 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 4 and 7

Test temperature: 15°...30°C, kohms : 1.2...4.0

50°...70°C, kohms : 0.3...1.2

Connections 4 and

ground, Mohms min.: 1.0

Connections 7 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature

15°...30°C, ohms : 14.3...17.3 50°...70°C, ohms : 15.5...21.0

Starting stop mV: 4120...4650

mV: 650...850 Shutoff stop

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 450 1st speed Checkbk. volt. mV : 2710 Supply pump pressure: Timing device 1/min: 1500 Speed travel : 7.2...9.0 mm Checkbk. volt. : (6.8...9.4) mm : 2940 > Setting value, bar: 6.9...8.1 1/min: 1500 2nd speed Checkbk. volt. mV : 2940 Timing device travel: Timing device 1/min: 1500 Speed travel Checkbk. volt mm : (10.3...11.9) : 2940 mV mm Setting value, mm : 11.0...11.2 1/min: 1500 3rd speed Checkbk. volt. mV : 2940 Full-load delivery: Timing device 1st temperature-conditioning 1/min: 1500 : 0.0...0.4 travel revolution mm : (0.0...1.4) mm Checkbk. volt > Solenoid valve mV : 2940 Fuel delivery cm3/ Start of volts : 12 1000s: 47.2...47.6 injection, $cm^3 / : 2.0$ Dispersion 4.th speed 1/min: 2200 1000s: > Checkbk. volt. mV : 3100 Test specifications of injection pump Timing device : 12.0...12.6 travel Check values in brackets mm mm : (11.8...12.8) > Supply pump pressure variations: Overflow at overflow valve: 1/min: 2200 1st speed 1/min : 2200 Speed Checkbk. volt Checkbk. volt. mV : 3100 : 3100 : 97...180 Overflow Supply pump $cm^{3}/10s$: : 8.1...9.5 pressure > bar bar 2st speed 1/min: 450 Checkbk. volt : 2710 mV Supply pump

pressure >

bar

bar

:

: 5.1...6.5

```
Idle delivery:
Fuel delivery variations:
                                                    1/min : 450
             1/min: 2200
                                       Speed
1. Speed
Checkbk. volt mV : 3100
Fuel delivery cm<sup>3</sup>/: 51.2...54.2
                                       Checkbk. volt mV : 2030
                                       Fuel delivery cm<sup>3</sup>/: 3.9...6.9
            1000s : (50.2...55.2)
                                                     1000s: (2.9...7.9)
Dispersion cm^3 : 2,5
                                       Solenoid valve
                                       Start of
            1000s.:
                                       injection, volts : 12
                                       Dispersion cm^3 : 2.0
             1/min: 1500
2. Speed
                                                     1000s: (3.0)
Checkbk. volt mV : 2940
Fuel delivery cm3/:
                                       Starting fuel delivery:
             1000s: (45.6...49.2)
                                                    1/min : 100
Dispersion cm<sup>3</sup>/:
                                       Speed
                                       Checkbk. volt mV : 4020
             1000s: (3.0)
  >
                                        Fuel delivery cm<sup>3</sup>/: 59.9...75.7
                                                    1000s: (58.9...76.7)
3. Speed
             1/min: 1000
                                          >
Checkbk. volt mV : 3060
                                       Solenoid valve
Fuel delivery cm^3/: 49.1...52.1
                                       Start of
             1000s: (48.6...52.6)
cm<sup>3</sup>/: 2.0
                                       injection, volts : 12
Dispersion
             1000s:
                                       Stop test:
   >
                                       Speed
                                                     1/min: 500
             1/min: 1000
                                       Checkbk. volt mV : 2710
4. Speed
                                                    volts: 0
Checkbk. volt mV : 2100
                                        ELAB
Fuel delivery cm^3/: 14.0...17.0
                                       Fuel delivery cm<sup>3</sup>/:
                                                     1000s: 3,0
             1000s: (13.5...17.5)
             cm^3/:2,0
Dispersion
                                       Shutoff solenoid:
             1000s:
             1/min: 500
                                       Cut-in voltage
5. Speed
Checkbk. volt mV : 2710
                                       min. > volts
                                                           : 10.0
Fuel delivery cm<sup>3</sup>/: 30.3...33.3
                                       Rated voltage,
                                                     volts: 12.0
             1000s: (29.8...33.8)
Dispersion cm<sup>3</sup>/: 2.0
             1000s:
                                       Dimensions for mounting and setting:
                                       Description
                                       KF
                                                   mm
                                                           :
                                       SVS max.
                                                   mm
```

FH

mm

Obsereve notes in remark colum

Test sheet : IVECO

Date of manufacture:

Edition : 13.08.1993

Replaces

: ISO 4113 Test oil

Injection pump : VE4/9E2100R570

: 0 460 494 996 Type No.

Customer Ident.No.:

Customer-specific details Customer

: Sofim Engine

: 8144.97.2580

Output kW 1/min: Speed

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 022

Opening

bar: 130...133 pressure >

Test pressure line: 1 680 750 073

Outer diameter : 6.00 x wall thickness >: 2.00 > mm: 450 x length

Overflow valve

Overflow valve

Test line : 0 986 612 434

(fuel-delivery actuator)

: 0 986 612 435 Test line

(solenoid valve

start of injection):

Actuator Connections 4 and 7 Test temperature:

15°...30°C, ohms : 0.4...1.0 50°...70°C, ohms : 0.45...1.1

Connections 4 and.

ground, Mohms min.: 1.0

Connections 7 and

ground, Mohms min.: 1.0

Connections 2 and 7

Mohms min. : 1.0

Connections 4 and 6

: 1.0 Mohms min.

High-pressure compressor sensor Sensor coils

Connections 1 and 3

kohms : 4.9...6.5

Connections 2 and 3

kohms : 4.9...6.5

Connections 1 and 2

: 9.8...13.0 kohms

Connections 1 and.

ground, Mohms min.: 1.0

Connections 2 and

ground, Mohms min.: 1.0

Connections 3 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 5 and 6 Test temperature:

15°...30°C, kohms : 1.2...4.0 50°...70°C, kohms : 0.3...1.2

Connections 5 and

ground, Mohms min.: 1.0

Connections 6 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature

15°...30°C, ohms : 14.3...17.3 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

mV : 650...850 Shutoff stop

Setting values of injection pump Check values in brackets

Supply pump pressure:

Speed 1/min: 1000

Checkbk. volt.

mV : 3400

Setting value, bar: 5.8...6.6

Timing device travel:

Speed 1/min: 1000

Checkbk. volt

mV : 3400

Setting value, mm : 9.2...9.4

Full-load delivery:

1st temperature-conditioning

revolution 1/min: 1500

Checkbk. volt

mV : 3400

Fuel delivery cm³/

> 1000s: 67.4...67.8

Dispersion $cm^3/:2.0$

> 1000s:

Test specifications of injection pump Check values in brackets

Supply pump pressure variations:

1st speed 1/min: 2100

Checkbk. volt

mV : 3400

Supply pump

pressure > bar : 7.4...8.2

> bar:

2st speed 1/min: 500

Checkbk. volt

mV : 3400

Supply pump

pressure > bar : 5.1...5.9

> bar :

3st speed 1/min: 150

Checkbk. volt

mV : 3400

Supply pump

pressure > bar : min. 3.5

> bar

Timing device variations:

1st speed 1/min: 500 Checkbk. volt. mV: 3400

Timing device

travel mm : 6.8...8.2 > mm : (6.3...8.7)

2nd speed 1/min: 1000 Checkbk. volt. mV: 3400

Timing device

travel mm :

> mm : (8.3...10.3)

3rd speed 1/min: 2100

Checkbk. volt. mV : 3400

Timing device

travel mm : 11.9...12.7 mm : (11.8...12.8)

4.th speed 1/min: 1000 Checkbk. volt. mV: 2200

Timing device

travel mm : max. 0.5 > mm : (max. 0.6

Solenoid valve

Start of

injection, volts: 12

Overflow at overflow valve:

Speed 1/min : 2100 Checkbk. volt. mV : 3400

Overflow : 83...166

 $> cm^3/10s:$

```
Fuel delivery variations:
                                     Idle delivery:
             1/min: 2100
                                     Speed
                                                 1/\min : 450
1. Speed
                                     Checkbk. volt mV : 2350
Checkbk. volt mV : 3400
                                     Fuel delivery cm<sup>3</sup>/: 11.2...14.8
Fuel delivery cm<sup>3</sup>/: 62.2...66.2
            1000s : (61.2...67.2)
                                                  1000s: (10.5...15.5)
Dispersion cm^3 : 3.0
                                     Solenoid valve
            1000s.:
                                     Start of
  >
                                     injection, volts : 12
                                                  cm^3/:2.5
Speed
             1/min: 1500
                                     Dispersion
                                                  1000s: (3.0)
Checkbk. volt mV : 3400
Fuel delivery cm<sup>3</sup>/:
                                     Starting fuel delivery:
             1000s: (65.6...69.6)
             cm^3/:
                                                 1/min : 100
Dispersion
                                     Speed
             1000s:
                                     Checkbk. volt mV : 3400
  >
                                     Fuel delivery cm3/:
3. Speed
             1/min: 1000
                                                  1000s: (42.0...54.0)
Checkbk. volt mV : 3400
                                     Solenoid valve
Fuel delivery cm^3/: 62.3...64.7
                                     Start of
             1000s: (61.5...65.5)
                                     injection, volts : 12
             cm^3/:2.0
Dispersion
  >
             1000s: (3.0)
                                     Stop test:
                                     Speed
                                                  1/min: 750
                                     Checkbk. volt mV : 3400
4. Speed
             1/min: 500
Checkbk. volt mV : 3400
                                                  volts: 0
Fuel delivery cm^3 : 51.8...55.4
                                     Fuel delivery cm<sup>3</sup>/:
  >
             1000s: (51.3...55.9)
                                     max.
                                                  1000s: (4.0)
             cm^3/:2.5
Dispersion
                                     Shutoff solenoid:
  > .
             1000s:
                                     Cut-in voltage
                                     min.> volts
                                                        : 10.0
                                     Rated voltage,
                                                  volts: 12.0
                                     Dimensions for mounting and setting:
                                     Description
```

K

KF

FH

SVS max.

mm

mm

mm

mm

:

:

:

Obsereve notes in remark colum

Test sheet : FIAT

Date of manufacture:

Edition : 01.07.1994

Replaces Test oil

: ISO 4113

Injection pump : VE5/9E2250R560

Type No. : 0 460 495 998

Customer Ident.No.:

Customer-specific details Customer : FIAT

Engine : M717 AT 24.C

Output kW : Speed 1/min:

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 022

Opening

pressure > bar : 130...133

Test pressure line: 1 680 750 073

Outer diameter : 6.00 x wall thickness > : 2.00 x length > mm : 450

Overflow valve :

Test line : 0 986 612 434 (fuel-delivery actuator)

Test line : 0 986 612 435

(solenoid valve

start of injection):

Actuator
Connections 4 and 7
Test temperature:

15°...30°C, ohms : 0.4...1.0 50°...70°C, ohms : 0.45...1.1

Connections 4 and.

ground, Mohms min.: 1.0

Connections 7 and

ground, Mohms min.: 1.0

Connections 2 and 7

Mohms min. : 1.0

Connections 4 and 6

Mohms min. : 1.0

High-pressure compressor sensor

Sensor coils

Connections 1 and 3

kohms : 4.9...6.5

Connections 2 and 3

kohms : 4.9...6.5

Connections 1 and 2

kohms : 9.8...13.0

Connections 1 and.

ground, Mohms min.: 1.0

Connections 2 and

ground, Mohms min.: 1.0

Connections 3 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 5 and 6

Test temperature:

15°...30°C, kohms : 1.2...4.0 50°...70°C, kohms : 0.3...1.2

Connections 5 and

ground, Mohms min.: 1.0

Connections 6 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature

15°...30°C, ohms : 14.3...17.3 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump Check values in brackets

Supply pump pressure:

Speed 1/min: 1250

Checkbk. volt.

mV : 3000

Setting value, bar: 6.6...7.4

Timing device travel:

Speed 1/min: 1250

Checkbk. volt

mV : 3000

Setting value, mm : 7.3...7.5

Full-load delivery:

1st temperature-conditioning

revolution 1/min: 1250

Checkbk. volt

mV : 2310

Fuel delivery cm³/

> 1000s: 34.3...34.7

Dispersion $cm^3/: 2.0$

> 1000s:

Test specifications of injection pump Check values in brackets

Supply pump pressure variations:

1st speed 1/min: 2250

Checkbk. volt

mV : 3000

Supply pump

pressure > bar : 8.4...9.2

> bar :

2st speed 1/min: 500

Checkbk. volt

mV : 3000

Supply pump

pressure > bar : 5.5...6.3

> bar :

Timing device variations:

1st speed 1/min: 500 Checkbk. volt. mV: 3000

Timing device

travel mm : 5.2...6.4 mm : (4.8...6.8)

2nd speed 1/min: 1250 Checkbk. volt. mV: 3000

Timing device

travel mm :

> mm : (6.6...8.2)

3rd speed 1/min: 2250 Checkbk. volt. mV: 3000

Timing device

travel mm : 9.5...10.1 > mm : (9.4...10.2)

4.th speed 1/min: 2250 Checkbk. volt. mV: 1850

Timing device

travel mm : max. 2.0 mm : (max. 3.0)

Solenoid valve

Start of

injection, volts: 12

Overflow at overflow valve:

Speed 1/min: 2250 Checkbk. volt. mV: 3000

Overflow : 69...125 > cm³/10s:

```
Idle delivery:
Fuel delivery variations:
                                     Speed
                                                 1/min : 400
1. Speed
             1/min: 2250
                                     Checkbk. volt mV : 1850
Checkbk. volt mV : 3000
                                     Fuel delivery cm^3/: 4.5...7.5
Fuel delivery cm<sup>3</sup>/: 62.1...64.7
                                                  1000s: (3.7...8.3)
            1000s : (61.4...65.4)
            cm^3/:2,0
                                     Solenoid valve
Dispersion
            1000s.:
                                     Start of
   >
                                     injection, volts : 12
                                                  cm^3/:2.0
2. Speed
             1/min: 1250
                                     Dispersion
Checkbk. volt mV : 2310
                                                  1000s: (3.0)
Fuel delivery cm3/:
                                     Starting fuel delivery:
             1000s: (33.0...36.0)
   >
                                                 1/min : 100
Dispersion
                                     Speed
             cm^3/:
                                     Checkbk. volt mV : 3290
   >
             1000s:
                                     Fuel delivery cm^3/:51.0...61.0
                                                  1000s: (48.0...64.0)
3. Speed
             1/min: 500
Checkbk. volt mV : 3000
                                     Solenoid valve
Fuel delivery cm3/: 51.5...55.5
                                     Start of
             1000s: (50.7...55.3)
                                     injection, volts : 12
             cm^3/:2.0
Dispersion
             1000s:
                                     Stop test:
   >
                                                  1/min: 1000
                                     Speed
                                     Checkbk. volt mV : 3000
                                                  volts: 0
                                     Fuel delivery cm<sup>3</sup>/:
                                                  1000s: 3,0
                                     max.
                                     Shutoff solenoid:
                                     Cut-in voltage
                                     min. > volts
                                                        : 10.0
                                     Rated voltage,
                                                  volts: 12.0
                                     Dimensions for mounting and setting:
                                     Description
```

K

KF

FH

SVS max.

mm

mm

mm

mm

: 3.2...3.4

Obsereve notes in remark colum

Test sheet : IVECO

Date of manufacture:

Edition : 19.01.1994

Replaces

: ISO 4113 Test oil

: VE4/11E1900R565 Injection pump

: 0 460 414 996 Type No.

Customer Ident.No.:

Customer-specific details Customer

: 840.47.2790 Engine

Output kW 1/min: Speed

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 116

Opening

pressure > bar: 207...210

Test pressure line: 1 680 750 073

Outer diameter : 6.00 x wall thickness >: 2.00 x length > mm: 450

: 2 467 413 006 Overflow valve

: 0 986 612 434 Test line

(fuel-delivery

actuator)

: 0 986 612 435 Test line

(solenoid valve start of injection):

TEST PRECONDITIONS

Test oil return temp. > °C

with thermometer : 45

Test oil supply

temperature > °C : 35...40

Hold-up

revolutions >1/min: 1100

Feedback

voltage mV : 2500

Actuator

Connections 4 and 7

Test temperature:

15°...30°C, ohms : 0.4...1.0 50°...70°C. ohms : 0.45...1.1

Connections 4 and.

ground, Mohms min.: 1.0

Connections 7 and

ground, Mohms min.: 1.0

Connections 2 and 7

: 1.0 Mohms min.

Connections 4 and 6

: 1.0 Mohms min.

High-pressure compressor sensor Sensor coils

Connections 1 and 3

: 4.9...6.5 Ohms

Connections 2 and 3

Ohms : 4.9...6.5

Connections 1 and 2

: 9.8...13.0 Ohms

Connections 1 and.

ground, Mohms min.: 1.0

Connections 2 and

ground, Mohms min.: 1.0

Connections 3 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 5 and 6

Test temperature:

15°...30°C, kohms : 1.2...4.0 50°...70°C, kohms : 0.3...1.2

Connections 5 and

ground, Mohms min.: 1.0

Connections 6 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature :

15°...30°C, ohms : 14.3...17.3

50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

mV : 650...850 Shutoff stop

Timing device variations: Setting values of injection pump Check values in brackets 1st speed 1/min: 750 Checkbk. volt. mV : 2050 Supply pump pressure: Timing device Speed 1/min: 500 : 9.4...11.4 Checkbk. volt. travel mm mm : (8.9...11.9) mV : 1950 Setting value, bar: 6.5...7.3 1/min: 500 2nd speed Checkbk. volt. mV : 1950 Timing device travel: Timing device Speed 1/min: 500 Checkbk. volt travel mm : (8.7...9.7) mm : 1950 mV Setting value, mm : 9.30...9.50 1/min: 1900 3rd speed Checkbk. volt. mV : 3500 Full-load delivery: Timing device 1st temperature-conditioning : 10.8...12.0 travel revolution 1/min: 1900 mm Checkbk. volt : (10.6...12.2 mm mV : 2500 1/min: 1300 4.th speed Output temperature °C Checkbk. volt. mV : 1850 : 48 Timing device 1/min: 750 Speed Checkbk, volt mm : max. 1.2 travel : (max. 3.5): 2050 mm mV Solenoid valve Measuring temperature °C Start of : 46 injection, volts: 12 Fuel delivery cm3/ 1000s: 39.2...40.2 $cm^3/: 2.5$ Dispersion Overflow at overflow valve: 1000s: Test specifications of injection pump | 1st temperature-conditioning revolution 1/min: 100 Check values in brackets Checkbk. volt. mV : 2500 Supply pump pressure variations: Output temperature °C : 41 1/min : 1900 Speed 1st speed 1/min: 1900 Checkbk. volt. mV : 3500 Checkbk. volt : 3500 Measuring mV temperature °C : 43 Supply pump : 83...167 Overflow pressure > bar : 8.4...9.2

bar :

 $cm^{3}/10s$:

>

Fuel delivery	y varia	ti	ions:	Idle delive			
				1st temperature-conditioning			
1st temperati	re-con	di	itioning	revolution			
revolution				Checkbk. vo	olt mV	:	2500
Checkbk. volt				Output		-	
	L IIIV	•	2500	temperature	۰,	•	51
Output	0.0	_	4.1	Speed	1/min		500
temperature			41	Checkbk. vo	1/10111	•	1360
Speed	T/WIL	•	1900	checkby. vc	TC IIIV	•	1300
Checkbk. volt Meßtemperatur	t mV	:	3500	Meßtemperat	ur °C	•	49
Meßtemperatu	r °C	:	43		ery cm ³ /	:	9.914.9
Fuel delivery	y cm³/	:	65.468.0	>		:	(8.915.9)
> :	1000s	:	(64.469.0)	Solenoid va	lve		
Dispersion of	cm³/	:		Start of			
> :				injection,	volts	:	12
		•		Dispersion	cm ³ /	:	3.0
2nd temperati	ire-con	a.	itioning	>			(4.0)
revolution :					200-2	•	()
				Starting fu	ol deli	170	~17.7 •
Checkbk. volt	C mv	•	2500				
Output				1st tempera			
temperature	°C .	:	45	revolution			
Speed :	1/min	:	1185	Checkbk. vo	olt mV	:	2500
Checkbk. volt	t mV	:	2170	Output			
Measuring				temperature			
temperature	°C		45	Speed	1/min	:	100
Fuel delivery	r cm³/	•	36.238.8	Checkbk. vo			
>	10006		(35,239.8)	Measuring		-	
Dispersion	10005	:	2.5	temperature	°C		49
			2.5	Fuel delive			
>	1000s	•					67.0
			• • • • •	>		•	
3rd temperati	ure-con	ıd:	ttioning	Solenoid va	itve		
revolution				Start of			
Checkbk. volt	t mV	:	2500	injection,	volts	:	12
Output							
temperature	°C	:	61	Stop test:			
Speed	1/min	:	750	Speed	1/min	:	1100
Checkbk. vol	Ł m∇	:	2050	Checkbk. vo	olt mV	:	3500
Measuring		_		ELAB			
temperature	۰,		57	Fuel delive			
				max.			3.0
Fuel deliver				Start of	10003	•	3.0
>			(38.241.2)	Scarc or			
Dispersion				Chutes as	annide.		
>	1000s	•		Shutoff sol			
		_		Cut-in volt	_		
4rd temperati				min. > volts		:	10.0
revolution	1/min	:	1900	Rated volta			
Checkbk. vol	t mV	:	2500		volts	•	12.0
Output							
temperature	°C	:	45	Dimensions	for mou	nt	ing and setting:
Speed							
Checkbk. vol	+ m\7		2900	Description	1		
	C IIIV	•	2900	K	mm	•	
Measuring	0.0		AE	KF		•	6.26.6
temperature	-U	•	60 0 71 4		mm		
Fuel deliver	A cm ³ /	-	07.0/1.4	SVS max.	mm	•	
>			(68.272.2)	FH	mm	•	4 467 040 440
Dispersion				TS		•	1 467 010 410
>	1000s	:	(3.0)	ł			

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST

Test sheet : Chrysler

Obsereve notes in remark colum

Test sheet : Chrysler

Date of manufacture:

Edition : 17.07.1996

Replaces

Test oil : ISO 4113

Injection pump : VE4/10E2100R707

Type No. : 0 460 404 975

Customer Ident.No.:

Customer-specific details
Customer : Chrysler

Engine : 424 CLIEE

Output kW: Speed 1/min:

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 022

Opening

pressure > . bar : 130...133

Test pressure line: 1 680 750 073

Outer diameter : 6.00 x wall thickness > : 2.00 x length > mm : 450

Overflow valve : 2 467 413 018

Test line : 0 986 612 445

(fuel-delivery actuator)

Test line : 1 687 011 208

(solenoid valve

start of injection): (Test cable set)

Actuator Connections 8 and 9 Test temperature:

15°...30°C, ohms : 0.4...1.0 50°...70°C, ohms : 0.45...1.1

Connections 8 and.

ground, Mohms min.: 1.0

Connections 9 and

ground, Mohms min.: 1.0

Connections 2 and 8

Mohms min. : 1.0

Connections 7 and 9

Mohms min. : 1.0

High-pressure compressor sensor

Sensor coils Connections 1 and 2

kohms : 4.9...6.5

Connections 3 and 2

kohms : 4.9...6.5

Connections 1 and 3

kohms : 9.8...13.0

Connections 1 and.

ground, Mohms min.: 1.0

Connections 2 and

ground, Mohms min.: 1.0

Connections 3 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 4 and 7 Test temperature:

15°...30°C, kohms : 1.2...4.0 50°...70°C, kohms : 0.3...1.2

Connections 4 and

ground, Mohms min.: 1.0

Connections 7 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature :

15°...30°C, ohms : 14.3...17.3 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 500 1st speed Checkbk. volt. mV : 2840 Supply pump pressure: Timing device 1/min: 1000 Speed : 5.5...6.9 Checkbk. volt. travel mm : (5.2...7.2) > mm : 3410 mV Setting value, bar: 7.1...7.7 2nd speed 1/min: 1000 Checkbk. volt. mV : 3410 Timing device travel: Timing device Speed 1/min: 1000 travel mm Checkbk, volt : (7.4...8.2) : 3410 mm mV Setting value, mm : 7.2...7.4 1/min: 1500 3rd speed Checkbk. volt. mV : 1790 Full-load delivery: Speed 1/min: 1250 Timing device Checkbk. volt travel mm : max. 0.5 : (max. 0.8): 2320 > mm mV Solenoid valve Fuel delivery cm3/ Start of 1000s: 29.8...30.2 injection, volts: 12 $cm^3/:2.0$ Dispersion 1000s: > 4st speed 1/min: 500 Checkbk. volt. mV : 2840 Test specifications of injection pump Timing device Check values in brackets : 5.5...6.9 travel mm : (5.2...7.2) Supply pump pressure variations: > mm Overflow at overflow valve: 1st speed 1/min: 2100 Checkbk. volt 1/min : 2100 Speed : 3130 mV Checkbk. volt. mV : 3130 Supply pump : 120...175 Overflow bar : 9.0...9.8 pressure > $cm^3/10s : (92...203)$ > bar : > 1/min: 500 2st speed Checkbk. volt : 2840 mV Supply pump

bar : 6.3...7.1

bar :

pressure >

Fuel delivery variations:

```
1/min: 2100
1. Speed
Checkbk. volt mV : 3130
Fuel delivery cm^3 /: 60.5...62.5
            1000s : (59.5...63.5)
Dispersion cm<sup>3</sup>/ : 2.0
            1000s.: (2.0)
             1/min: 1250
2. Speed
Checkbk. volt mV : 2320
Fuel delivery cm3/:
              1000s: (28.7...31.3)
Dispersion
              cm^3 / :
              1000s: (3.0)
   >
              1/min: 1000
3. Speed
Checkbk. volt mV : 3410
Fuel delivery cm<sup>3</sup>/: 78.3...80.3
              1000s: (77.3...8!.3) cm<sup>3</sup>/: 2.0
Dispersion
              1000s: (2.0)
              1/min: 500
4. Speed
Checkbk. volt mV : 2840
Fuel delivery cm<sup>3</sup>/: 44.5...46.5
              1000s: (43.5...47.5)
              cm^3/:2.0
Dispersion
              1000s: (2.0)
```

Idle delivery:

```
1/min : 400
Speed
Checkbk. volt mV : 2110
Fuel delivery cm^3 /: 8.5...10.9
            1000s: (7.4...12.0)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm^3/:2.0
            1000s: (3.0)
Starting fuel delivery:
           1/min : 100
Speed
Checkbk. volt mV : 3830
Fuel delivery cm<sup>3</sup>/: 66.0...76.0
            1000s: (63.0...79.0)
Solenoid valve
Start of
injection, volts : 12
Stop test:
             1/min: 1500
Speed
Checkbk. volt mV : 4000
            volts: 0
Fuel delivery cm3/: max. 3.0
            1000s:
max.
Shutoff solenoid:
```

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Dimensions for mounting and setting:

Description

K mm :

KF mm :

SVS max. mm :

FH mm :

BOSCH INJECTION PUMP TEST SPECIFICATIONS	ELECTRICAL TEST
Obsereve notes in remark colum	Actuator Connections 5 and 6
Test sheet : VW Date of manufacture: Edition : 16.07.1996	Test temperature: 15°30°C, ohms : 0.41.0 50°70°C, ohms : 0.451.1
Replaces : ISO 4113	Conrections 5 and. ground, Mohms min.: 1.0
Injection pump : VE4/10E2075R700	Connections 6 and ground, Mohms min.: 1.0
Type No. : 0 460 404 977 Customer Ident.No.:	Connections 3 and 5 Mohms min. : 1.0 Connections 6 and 7
Customer-specific details Customer : VW	Mohms min. : 1.0
Engine : 1.9 TDI	High-pressure compressor sensor Sensor coils Connections 1 and 2
Output kW : Speed 1/min:	Ohms : 4.96.5 Connections 2 and 3
TEST BENCH PREREQUISITES	Ohms : 4.96.5 Connections 1 and 3
Inlet pressure, bar: 0.300.40	Ohms : 9.813.0 Connections 1 and.
Calibrating nozzle- holder assembly > : 1 688 901 114	ground, Mohms min.: 1.0 Connections 2 and ground, Mohms min.: 1.0
Opening pressure > bar: 207210	Connections 3 and ground, Mohms min.: 1.0
Test pressure line: 1 680 750 085	Temperature sensor, fuel Connentions 4 and 7
Outer diameter : 6.00 x wall thickness > : 2.20 x length > mm : 350	Test temperature: 15°30°C, kohms : 1.24.0 50°70°C, kohms : 0.31.2
Overflow valve : 2 467 413 018	Connections 4 and ground, Mohms min.: 1.0
Test line : 0 986 612 444 (fuel-delivery actuator)	Connections 7 and ground Mohms min. : 1.0
Test line : 1 687 011 208 (solenoid valve start of injection): (Test cable set)	Solenoid valve, start of injection Connections 1 and 2 Test temperature :
TEST PRECONDITIONS	15°30°C, ohms : 14.317.3 50°70°C, ohms : 15.521.0
Test oil return temp. > °C with thermometer : 55	Starting stop mV : 41204650 Shutoff stop mV : 650850
Test oil supply temperature > °C : 4247	
Hold-up revolutions >1/min: 1200 Feedback	
voltage mV : 2500	

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 500 1st speed Checkbk. volt. mV : 2560 Supply pump pressure: Timing device 1/min: 500 Speed travel mm Checkbk. volt. : (9.2...11.2) mm > mV : 2560 Setting value, bar: 8.4...9.2 1/min: 2050 2nd speed Checkbk. volt. mV : 3890 Timing device travel: Timing device Speed 1/min: 500 : 11.8...12.8 Checkbk. volt travel mm : (11.5...13.1) : 2510 mm mV Setting value, mm : 10.1...10.3 3rd speed 1/min: 1500 Checkbk. volt. mV : 1500 Full-load delivery: Timing device 1st temperature-conditioning : max. 0.5 travel mm 1/min : 2000 revolution : (max. 0.8)mm > Checkbk. volt Solenoid valve mV : 2500 Start of Output injection, volts: 12 temperature °C : 61 1/min: 750 Speed 4.th speed 1/min: 300 Checkbk. volt Checkbk. volt. mV : 2560 mV : 2480 Timing device Measuring : 5.2...9.2 travel mm temperature °C : 57 : (3.4...11.0) mm Fuel delivery cm3/ > 1000s: 34.7...35.1 Overflow at overflow valve: $cm^3/:2.5$ Dispersion 1000s: 1st temperature-conditioning revolution 1/min: 100 Test specifications of injection pump Checkbk. volt. mV : 2500 Check values in brackets Output temperature °C : 51 Supply pump pressure variations: 1/min : 2050 Speed Checkbk. volt. mV : 3890 1/min: 2050 1st speed Measuring Checkbk. volt temperature °C : 53 : 3890 mV Overflow : 138...194 Supply pump $cm^3/10s$: bar : 10.9...11.9 pressure > bar : 1/min: 300 2st speed Checkbk. volt : 2560 Supply pump pressure > bar : 6.6...8.0

bar :

>

```
Idle delivery:
Fuel delivery variations:
                                     1st temperature-conditioning
                                                1/min: 2000
                                     revolution
1st temperature-conditioning
                                     Checkbk. volt mV : 2500
revolution 1/min: 100
                                     Output
Checkbk. volt mV : 2500
                                     temperature °C
                                                        : 61
Output
                                                 1/min : 400
temperature °C : 51
                                     Speed
                                     Checkbk. volt mV : 1800
            1/min : 2050
Speed
                                     Meßtemperatur °C : 57
Checkbk. volt mV : 3890
                                     Fuel delivery cm<sup>3</sup>/: 9.2...10.2
Meßtemperatur °C : 53
                                                  1000s: (6.7...12.7)
Fuel delivery cm<sup>3</sup>/: 49.5...51.9
                                     Solenoid valve
            1600s : (48.9...52.5)
Dispersion cm<sup>3</sup>/ : 3.0
                                     Start of
                                     injection, volts : 12
            1000s.:
                                     Dispersion cm^3/:3.0
                                                  1000s: (4.0)
2nd temperature-conditioning
revolution 1/min : 2000
                                     Starting fuel delivery:
Checkbk. volt mV : 2500
                                     1st temperature-conditioning
Output
                                     revolution 1/min : 2000
temperature °C
                  : 61
                                     Checkbk. volt mV : 2500
            1/min : 750
Speed
                                     Output
Checkbk. volt mV : 2480
                                     temperature °C
                                                       : 65
Measuring
                                                 1/min : 100
                                     Speed
temperature °C
                                     Checkbk. volt mV : 2420
Fuel delivery cm<sup>3</sup>/:
                                     Measuring
             1000s: (33.6...36.2)
                                     temperature °C : 61
             cm^3/:
Dispersion
                                     Fuel delivery cm^3/: 35.7...45.7
             1000s: (2.5)
                                                  1000s: (32.7...48.7)
                                     Solenoid valve
3rd temperature-conditioning
revolution 1/min: 2000
                                     Start of
                                     injection, volts : 12
Checkbk. volt mV : 2500
Output
                                     Stop test:
temperature °C
                   : 61
                                     Speed
                                                  1/min: 1000
            1/min : 500
Speed
                                     Checkbk. volt mV : 4000
Checkbk. volt mV : 2560
                                                  volts: 0
Measuring
temperature °C
                 : 57
                                     Fuel delivery cm3/:
Fuel delivery cm<sup>3</sup>/: 41.9...44.5
                                                  1000s: 3.0
                                     max.
                                     Start of
             1000s: (41.2...45.2)
             cm^3/:3.0
Dispersion
                                     Shutoff solenoid:
             1000s:
                                     Cut-in voltage
                                     min. > volts
                                                        : 10.0
                                     Rated voltage,
                                                  volts: 12.0
                                     High-pressure compressor sensor
                                     Testing only possible with ballast
                                     Take note of test instructions
                                     "Distributor pump for direct
                                     injectors"!
                                     Dimensions for mounting and setting:
                                     Description
                                     K
                                                mm
                                                mm
                                                        : 8.2...8.6
                                     KF
                                     SVS max.
                                                mm
                                                mm
                                     FH
```

TS

: 1 467 010 495

THE PROPERTY AND STORE OF STREET	DI DOMPTONI MECM
BOSCH INJECTION PUMP TEST SPECIFICATIONS	ELECTRICAL TEST
the state of the s	3 chunt ox
Obsereve notes in remark colum	Actuator Connections 5 and 6
Test sheet : VW	Test temperature: 15°30°C, ohms : 0.41.0
Date of manufacture:	50°70°C, ohms : 0.451.1
Edition : 19.02.1997 Replaces :	50°/0°C, Office : 0.451.1
Replaces :	Connections 5 and.
Test oil : ISO 4113	ground, Mohms min.: 1.0
4 TO 4 A TO 0 TO	
Injection pump : VE4/10E2250R590-2	ground, Mohms min.: 1.0
	Connections 3 and 5
Type No. : 0 460 404 978	Mohms min. : 1.0
Customer Ident.No.:	Connections 6 and 7
101- 2-4-22-	Mohms min. : 1.0
Customer-specific details	MONIES WITH I.V
Customer : VW	High-pressure compressor sensor
- 1 0 MDT EDG	Sensor coils
Engine : 1.9 TDI EDC	Connections 1 and 2
	Ohms : 4.96.5
Output kW :	Connections 2 and 3
Speed 1/min:	Ohms : 4.96.5
THE PROPERTY OF THE PARTY OF TH	Connections 1 and 3
TEST BENCH PREREQUISITES	Ohms : 9.813.0
- 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Onms . 9.813.0
Inlet pressure, bar: 0.300.40	Connections 1 and.
	ground, Mohms min.: 1.0
Calibrating nozzle-	Connections 2 and
holder assembly > : 1 688 901 114	ground, Mohms min.: 1.0
• • • • • • • •	Connections 3 and
Opening	ground, Mohms min.: 1.0
pressure > bar: 207210	ground, Monas arm 2.0
mark	Temperature sensor, fuel
Test pressure line: 1 680 750 085	Connentions 4 and 7
Outer diameter : 6.00	Test temperature:
x wall thickness >: 2.20	15°30°C, kohms : 1.24.0
x length > mm: 350	50°70°C, kohms : 0.31.2
x length > mm . 550	30 11170 07 110111110
Overflow valve : 2 467 413 018	Connections 4 and
AASTITON ANTAG 1 % 341 379 970	ground, Mohms min.: 1.0
Test line : 0 986 612 439	Connections 7 and
(fuel-delivery	ground Mohms min. : 1.0
actuator) : (KDEP 1865/10)	
Wanted to 1	Solenoid valve, start of injection
Test line : 0 986 611 983	Connections 1 and 2
(solenoid valve	Test temperature :
start of injection): (KDEP 1190)	15°30°C, ohms : 14.317.3
	50°70°C, ohms : 15.521.0
TEST PRECONDITIONS	
• mar • • • • • • • • • • • • • • • • • • •	Starting stop mV : 41204650
Test oil	· ·
return temp. > °C	Shutoff stop mV : 650850
with thermometer : 55	
** **	

Test oil supply temperature > °C : 42...47

Hold-up revolutions >1/min: 1200 Feedback voltage mV : 2500

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 500 1st speed Checkbk. volt. mV : 2450 Supply pump pressure: Timing device 1/min: 500 Speed travel mm Checkbk. volt. : (8.8...10.8) mm : 2450 mV Setting value, bar: 7.3...8.7 1/min: 2000 2nd speed Checkbk. volt. mV : 4000 Timing device travel: Timing device 1/min: 500 Speed : 11.5...12.9 travel mm Checkbk. volt : (11.4...13.0) : 2450 mm mV Setting value, mm : 9.7...9.9 1/min: 1400 3rd speed Checkbk. volt. mV : 1310 Full-load delivery: Timing device 1st temperature-conditioning : max. 0.5 travel mm revolution 1/min: 2000 : (max. 0.8) mm > Checkbk. volt Solenoid valve : 2500 mV Start of Output injection, volts: 12 temperature °C : 61 1/min: 750 Speed 4.th speed 1/min: 300 Checkbk. volt Checkbk. volt. mV : 2450 : 2420 mV Timing device Measuring : 6.5...9.7 travel mm temperature °C : 57 : (6.1...10.1) mm Fuel delivery cm3/ 1000s: 37.2...37.6 Overflow at overflow valve: $cm^3/:2,5$ Dispersion 1000s: > 1st temperature-conditioning revolution 1/min: 100 Test specifications of injection pump Checkbk. volt. mV : 2500 Check values in brackets Output temperature °C : 51 Supply pump pressure variations: 1/min : 2000 Speed Checkbk. volt. mV : 4000 1/min: 2000 1st speed Measuring Checkbk. volt temperature °C : 4000 mV: 97...208 Overflow Supply pump $cm^{3}/10s:$ bar : 9.7...11.1 pressure > bar : (9.6...11.2) 2st speed 1/min: 300 Checkbk. volt : 2450 Supply pump bar : 6.5...8.1 pressure >

bar : (6.4...8.2)

>

Fuel delivery variations:	Idle delivery:
	1st temperature-conditioning
1st temperature-conditioning	revolution 1/min: 2000
revolution 1/min: 100	Checkbk. volt mV : 2500
Checkbk. volt mV : 2500	Output
Output	temperature °C : 61
temperature °C : 51	Speed 1/min: 400
Speed 1/min : 2000	Checkbk. volt mV : 1550
Checkbk. volt mV : 4000	Meßtemperatur °C : 57
Meßtemperatur °C : 53	Fuel delivery cm ³ /: 6.811.8
Fuel delivery cm^3 /: 54.257.2	> 1000s: (6.312,3)
> 1000s : (53.957.5)	Solenoid valve.Start of
Dispersion cm ³ / : 2.5	injection, volts : 12
> 1000s.: (2.5)	Dispersion cm ³ /: 4.0
	> 1000s: (4.0)
2nd temperature-conditioning	
revolution 1/min : 2000	Starting fuel delivery:
Checkbk. volt mV : 2500	1st temperature-conditioning
Output	revolution 1/min : 2000
temperature °C : 61	Checkbk. volt mV : 2500
Speed 1/min: 750	Output
Checkbk. volt mV : 2420	temperature °C : 65
Measuring	Speed 1/min: 100
temperature °C : 57	Checkbk. volt mV : 2310
Fuel delivery cm ³ /:	Measuring
> 1000s: (36.138.7)	temperature °C : 61
Dispersion cm ³ /:	Fuel delivery cm ³ /: 36.048.0
> 1000s: (2.5)	> 1000s: (34.050.0)
	Solenoid valve
3rd temperature-conditioning	Start of
revolution 1/min: 2000	injection, volts : 12
Checkbk. volt mV : 2500	ł
Output	Stop test:
temperature °C : 61	Speed 1/min: 750
Speed 1/min: 500	Checkbk. volt mV : 3650
Checkbk. volt mV : 2450	ELAB volts: 0
Measuring	Fuel delivery cm ³ /:
temperature °C : 57	max. 1000s: 3.0
Fuel delivery cm ³ /: 43.646.6	Start of
> 1000s: (42.847.4)	Churtuses and ampide
Dispersion $cm^3/:3.0$	Shutoff solenoid:
> 1000s: (3.0)	Cut-in voltage
	min. > volts : 10,0
	Rated voltage,
	volts: 12,0
	Notes:
	High-pressure compressor sensor
	Testing only possible with ballast
	EPS 910
	EPS 910
	Take note of test instructions
	"Distributor pump for direct
	injectors"!
	injectors .
	Dimensions for mounting and setting
	Description
	K mm :
	KF mm : 6.26.6
	SVS max. mm :
	FH mm :
	TS : 1 467 010 410

BOSCH INJECTION PUMP TEST SPECIFICATIONS	ELECTRICAL TEST
ODDCICAC HOCCO THE TAMES OF THE	Actuator Connections 5 and 6
Date of manufacture:	Test temperature: 15°30°C, ohms : 0.41.0 50°70°C, ohms : 0.451.1
Test oil : ISO 4113	Connections 5 and. ground, Mohms min.: 1.0
	Connections 6 and ground, Mohms min.: 1.0
Type No. : 0 460 404 979 Customer Ident.No.:	Connections 3 and 5 Mohms min. : 1.0 Connections 6 and 7
Customer : VW	Mohms min. : 1.0
Engine : 1.9 TDI	High-pressure compressor sensor Sensor coils Connections 1 and 2
Output kW : Speed 1/min:	Ohms : 4.96.5 Connections 2 and 3
TEST BENCH PREREQUISITES	Ohms : 4.96.5 Connections 1 and 3 Ohms : 9.813.0
Inlet pressure, bar: 0.300.40	Connections 1 and.
Calibrating nozzle- holder assembly > : 1 688 901 114	ground, Mohms min.: 1.0 Connections 2 and ground, Mohms min.: 1.0
Opening pressure > bar: 207210	Connections 3 and ground, Mohms min.: 1.0
Test pressure line: 1 680 750 085	Temperature sensor, fuel Connentions 4 and 7
Outer diameter : 6.00 x wall thickness > : 2.20 x length > mm : 350	Test temperature: 15°30°C, kohms : 1.24.0 50°70°C, kohms : 0.31.2
Overflow valve : 2 467 413 018	Connections 4 and ground, Mohms min.: 1.0
Test line : 0 986 612 444 (fuel-delivery	Connections 7 and ground Mohms min. : 1.0
actuator) : Test line : 1 687 011 208	Solenoid valve, start of injection Connections 1 and 2
(solenoid valve start of injection): (Test cable set)	Test temperature : 15°30°C, ohms : 14.317.3 : 50°70°C, ohms : 15.521.0
TEST PRECONDITIONS	Starting stop mV : 41204650
Test oil return temp. > °C with thermometer : 55	Shutoff stop mV : 650850
Test oil supply temperature > °C : 4247	
Hold-up revolutions >1/min : 1200 Feedback	
voltage mV : 2500	

Timing device variations: Setting values of injection pump Check values in brackets 1st speed 1/min: 500 Checkbk. volt. mV : 2560 Supply pump pressure: Timing device Speed 1/min: 500 travel Checkbk. volt. : (9.2...11.2) mm : 2560 Setting value, bar: 8.4...9.2 1/min: 2050 2nd speed Checkbk. volt. mV : 3890 Timing device travel: Timing device 1/min: 500 , Speed travel : 11.8...12.8 mm Checkbk. volt : (11.5...13.1) : 2560 mm > mV Setting value, mm : 10.1...10.3 1/min: 1500 3rd speed Checkbk. volt. mV : 1500 Full-load delivery: Timing device 1st temperature-conditioning : max. 0.5 travel mm revolution 1/min: 2000 : (max. 0.8)mm > Checkbk. volt Solenoid valve : 2500 mV Start of Output injection, volts: 12 temperature °C : 61 1/min: 750 Speed 4.th speed 1/min: 300 Checkbk. volt Checkbk. volt. mV : 2560 : 2480 mV Timing device Measuring : 5.2...9.2 travel temperature °C : 57 mm : (3.4...11.0) Fuel delivery cm³/ mm 1000s: 34.7...35.1 Overflow at overflow valve: $cm^3/:2,5$ Dispersion 1000s: 1st temperature-conditioning Test specifications of injection pump revolution 1/min: 100 Checkbk. volt. mV : 2500 Check values in brackets Output temperature °C : 51 Supply pump pressure variations: 1/min : 2050 Speed Checkbk. volt. mV : 3890 1/min: 2050 1st speed Measuring Checkbk. volt temperature °C : 53 : 3890 mV : 138...194 Overflow Supply pump $cm^{3}/10s$: bar : 10.9...11.9 pressure > bar : 1/min: 300 2st speed Checkbk. volt : 2560 Supply pump bar : 6.6...8.0 pressure > bar : >

```
Idle delivery:
Fuel delivery variations:
                                     1st temperature-conditioning
                                     revolution
                                                 1/min : 2000
1st temperature-conditioning
                                     Checkbk. volt mV : 2500
revolution
            1/min: 100
Checkbk. volt mV : 2500
                                     Output
                                     temperature °C
                                                       : 61
Output
                                                 1/min : 400
                                     Speed
temperature °C
                   : 51
                                     Checkbk. volt mV : 1800
            1/min : 2050
Speed
                                     Meßtemperatur °C : 57
Checkbk. volt mV
                  : 3890
                                     Fuel delivery cm^3/: 9.2...10.2
                 : 53
Meßtemperatur °C
                                                  1000s: (6.7...12.7)
Fuel delivery cm<sup>3</sup>/: 49.5...51.9
                                     Solenoid valve
            1000s : (48.9...52.5)
Dispersion cm^3/:3.0
                                     Start of
                                     injection, volts : 12
            1000s.:
   >
                                     Dispersion cm<sup>3</sup>/: 3.0
                                                  1000s: (4.0)
2nd temperature-conditioning
revolution 1/min : 2000
                                     Starting fuel delivery:
Checkbk. volt mV : 2500
                                     1st temperature-conditioning
Output
                                     revolution 1/min : 2000
temperature °C : 61
                                     Checkbk. volt mV : 2500
            1/min : 750
Speed
Checkbk. volt mV : 2480
                                     Output
                                     temperature °C
                                                        : 65
Measuring
                                                 1/min : 100
                                     Speed
temperature °C : 57
                                     Checkbk. volt mV : 2420
Fuel delivery cm3/:
                                     Measuring
             1000s: (33.6...36.2)
                                     temperature °C : 61
             cm^3/:
Dispersion
                                     Fuel delivery cm<sup>3</sup>/: 35.7...45.7
             1000s: (2.5)
                                                  1000s: (32.7...48.7)
3rd temperature-conditioning
                                     Solenoid valve
                                     Start of
revolution
            1/min: 2000
                                     injection, volts : 12
Checkbk. volt mV : 2500
Output
                                     Stop test:
temperature °C
                  : 61
                                                  1/min: 1000
            1/min : 500
                                     Speed
Speed
                                     Checkbk. volt mV : 4000
Checkbk. volt mV : 2560
                                                  volts: 0
                                     ELAB
Measuring
                                     Fuel delivery cm3/:
temperature °C
                  : 57
Fuel delivery cm<sup>3</sup>/: 41.9...44.5
                                                  1000s: 3.0
                                     max.
                                     Start of
             1000s: (41.2...45.2)
Dispersion cm^3/:3.0
                                     Shutoff solenoid:
             1000s:
                                     Cut-in voltage
                                                        : 10.0
                                     min.> volts
                                     Rated voltage,
                                                  volts: 12.0
                                     High-pressure compressor sensor
                                     Testing only possible with ballast
                                     EPS 910
                                      Take note of test instructions
                                      "Distributor pump for direct
                                      injectors"!
                                      Dimensions for mounting and setting:
                                      Description
                                     K
                                                mm
                                                        : 8.2...8.6
                                     KF
                                                mm
                                      SVS max.
                                                mm
                                     FH
                                                mm
```

TS

: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST

Obsereve notes in remark colum

Test sheet : Chrysler

Date of manufacture:

: 10.12.1996 Edition

Replaces

: ISO 4113 Test oil

Injection pump : VE4/10E2100L694

: 0 460 404 980 Type No.

Customer Ident.No.:

Customer-specific details : Chrysler Customer

: 425 CLIEZ/CLIEF Engine

kW Output 1/min: Speed

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

calibrating nozzle-

holder assembly > : 1 688 901 022

Opening

bar: 130...133 pressure >

Test pressure line: 1 680 750 073

: 6.00 Outer diameter x wall thickness >: 2.00 > mm: 450 x length

: 2 467 413 018 Overflow valve

: 0 986 612 445 Test line

(fuel-delivery actuator)

: 1 687 011 208 Test line

(solenoid valve

start of injection): (Test cable set)

Actuator Connections 8 and 9

Test temperature:

15°...30°C, ohms : 0.4...1.0 50°...70°C, ohms : 0.45...1.1

Connections 8 and.

ground, Mohms min.: 1.0

Connections 9 and

ground, Mohms min.: 1.0

Connections 2 and 8

Mohms min.

Connections 7 and 9

Mohms min. : 1.0

High-pressure compressor sensor

Sensor coils

Connections 1 and 2

: 4.9...6.5 kohms

Connections 3 and 2

kohms : 4.9...6.5

Connections 1 and 3

: 9.8...13.0 kohms

Connections 1 and.

ground, Mohms min.: 1.0

Connections 2 and

ground, Mohms min.: 1.0

Connections 3 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 4 and 7

Test temperature:

15°...30°C, kohms : 1.2...4.0 50°...70°C, kohms : 0.3...1.2

Connections 4 and

ground, Mohms min.: 1.0

Connections 7 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature

15°...30°C, ohms : 14.3...17.3 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 500 1st speed Checkbk. volt. mV : 3100 Supply pump pressure: Timing device 1/min: 1000 Speed : 5.2...6.8 travel mm Checkbk. volt. : (5.0...7.0) mm : 3100 > mV Setting value, bar: 6.4...7.8 2nd speed 1/min: 1000 Checkbk. volt. mV : 3100 Timing device travel: Timing device Speed 1/min: 1000 Checkbk. volt travel mm : (6.1...7.9) : 3100 mm mV Setting value, mm : 6.9...7.1 3rd speed 1/min: 1500 Checkbk. volt. mV : 1680 Full-load delivery: Timing device 1/min: 1250 Speed : max. 0.5 Checkbk. volt travel mm : (max. 1.5): 2270 > mm mV Fuel delivery cm3/ Solenoid valve Start of 1000s: 30.6...31.0 injection, volts: 12 $cm^3/:2.0$ Dispersion 1000s: 4rd speed 1/min: 2100 Checkbk. volt. mV : 3100 Test specifications of injection pump Timing device Check values in brackets : 9.4...10.2 travel mm : (9.3...10.3) mm Supply pump pressure variations: > Overflow at overflow valve: 1st speed 1/min: 2100 Checkbk. volt 1/min : 2100 Speed : 3100 mV : 3100 Checkbk. volt. mV Supply pump : 111...167 bar : 8.0...9.4 Overflow pressure > $cm^3/10s$: bar : > 1/min: 500 2st speed Checkbk. volt : 3100 mV Supply pump pressure > bar : 6.0...7.4 bar : 3st speed 1/min: 150 Checkbk. volt : 3680 mV Supply pump

bar : min. 3.5

:

bar

pressure >

(4

```
Idle delivery:
Fuel delivery variations:
                                                 1/min : 400
             1/min: 2100
1. Speed
                                     Speed
                                     Checkbk. volt mV : 2000
Checkbk. volt mV : 3100
                                     Fuel delivery cm3/: 12.1...15.5
Fuel delivery cm<sup>3</sup>/: 63.5...66.5
            1000s : (63.0...67.0)
                                                  1000s: (11.5...16.1)
                                     Solenoid valve
Dispersion cm<sup>3</sup>/
                                     Start of
            1000s.:
   >
                                     injection, volts : 12
                                                  cm^3/:2.0
                                     Dispersion
             1/min: 1250
2. Speed
                                                  1000s: (3.0)
Checkbk. volt mV : 2270
Fuel delivery cm3/:
                                     Starting fuel delivery:
             1000s: (29.5...32.1)
                                                 1/min : 100
                                     Speed
             cm^3/:
Dispersion
                                     Checkbk. volt mV : 3680
             1000s: (3.0)
                                     Fuel delivery cm3/: 72.0...82.0
                                                  1000s: (69.0...85.0)
             1/min: 1000
3. Speed
                                     Solenoid valve
Checkbk. volt mV : 3100
                                     Start of
Fuel delivery cm^3/: 66.7...69.7
                                     injection, volts : 12
             1000s: (66.2...70.2)
             cm^3/:2.0
Dispersion
                                     Stop test:
             1000s:
   >
                                                  1/min: 2100
                                     Speed
                                     Checkbk. volt mV : 3100
             1/min: 500
4. Speed
                                                  volts: 0
Checkbk. volt mV : 2660
                                     ELAB
Fuel delivery cm^3 /: 43.4...46.4
                                      Fuel delivery cm<sup>3</sup>/: max. 3.0
                                                  1000s:
             1000s: (42.9...46.9)
                                     max.
             cm^3/:2.0
Dispersion
                                      Shutoff solenoid:
             1000s:
                                     Cut-in voltage
                                     min.> volts
                                                        : 10.0
                                     Rated voltage,
                                                  volts: 12.0
                                      Dimensions for mounting and setting:
                                     Description
                                     K
```

KF

FH

SVS max.

mm

mm

mm

:

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST

Obsereve notes in remark colum

Test sheet : Ford

Date of manufacture:

: 19.03.1996 Edition

Replaces

: ISO 4113 Test oil

: VE4/10E2100L688 Injection pump

: 0 460 404 981 Type No.

Customer Ident.No.:

Customer-specific details Customer

Engine : 425 CLIEF

Output kW Speed 1/min:

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 022

Opening

bar: 130...133 pressure >

Test pressure line: 1 680 750 073

: 6.00 Outer diameter x wall thickness >: 2.00 > mm: 450 x length

: 2 467 413 018 Overflow valve

: 0 986 612 446 Test line

(fuel-delivery actuator)

: 1 687 011 208 Test line

(solenoid valve

start of injection): (Test cable set)

Actuator Connections 6 and 5 Test temperature:

15°...30°C, ohms 50°...70°C, ohms : 0.4...1.0 : 0.45...1.1

Connections 6 and.

ground, Mohms min.: 1.0

Connections 5 and

ground, Mohms min.: 1.0

Connections 2 and 6

Mohms min.

Connections 7 and 5

Mohms min. : 1.0

High-pressure compressor sensor Sensor coils

Connections 1 and 2

: 4.9...6.5 kohms

Connections 2 and 3

: 4.9...6.5 kohms

Connections 1 and 3

: 9.8...13.0 kohms

Connections 1 and.

ground, Mohms min.: 1.0

Connections 2 and

ground, Mohms min.: 1.0

Connections 3 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 4 and 7 Test temperature:

15°...30°C, kohms ': 1.2...4.0

50°...70°C, kohms : 0.3...1.2

Connections 4 and

ground, Mohms min.: 1.0

Connections 7 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature

15°...30°C, ohms : 14.3...17.3 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

mV : 650...850 Shutoff stop

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 500 1st speed Checkbk. volt. mV : 3100 Supply pump pressure: 1/min: 1000 Timing device Speed : 5.3...6.7 Checkbk. volt. travel mm : (5.0...7.0) : 3100 mm mV Setting value, bar: 6.8...7.4 1/min: 1000 2nd speed Checkbk. volt. mV : 3100 Timing device travel: Timing device Speed 1/min: 1000 mm travel Checkbk. volt : (6.1...7.9) : 3100 mm mV Setting value, mm : 6.9...7.1 1/min: 1500 3rd speed Checkbk. volt. mV : 1680 Full-load delivery: Timing device 1st temperature-conditioning : max. 0.5 travel mm revolution 1/min: 1250 : (max. 1.5) mm > Checkbk. volt Solenoid valve : 2270 mV Start of Fuel delivery cm3/ injection, volts: 12 1000s: 30.1...30.5 $cm^3/:2.0$ Dispersion 4.th speed 1/min: 2100 1000s: Checkbk. volt. mV : 3100 Timing device Test specifications of injection pump : 9.5...10.1 travel mm Check values in brackets : (9.3...10.3) mm Supply pump pressure variations: Overflow at overflow valve: 1st speed 1/min: 2100 Checkbk. volt 1/min : 2100 : 3100 Speed : 3100 Checkbk. volt. mV Supply pump Overflow : 83...138 bar : 8.3...9.1 pressure > $cm^3/10s$: bar : 2st speed 1/min: 500 Checkbk. volt : 3100 mV Supply pump pressure > bar : 6.3...7.1 bar : 1/min: 150 3st speed Checkbk. volt : 3680 Supply pump pressure > bar : min., 3.5

bar

>

```
Idle delivery:
Fuel delivery variations:
                                                  1/min : 400
                                      Speed
             1/min: 2100
1. Speed
                                      Checkbk. volt mV : 2000
Fuel delivery cm<sup>3</sup>/: 12.0...14.4
Checkbk. volt mV : 3100
Fuel delivery cm<sup>3</sup>/: 64.0...66.0
                                                   1000s: (10.9...15.5)
            1000s : (63.0...67.0)
                                      Solenoid valve
Dispersion
            cm3/
                                      Start of
            1000s.:
                                      injection, volts : 12
                                      Dispersion
                                                   cm^3 / : 2.0
Speed
             1/min: 1250
Checkbk. volt mV : 2270
                                                   1000s: (3.0)
Fuel delivery cm3/:
                                      Starting fuel delivery:
             1000s: (29.0...31.6)
                                                  1/min : 100
             cm^3/:
                                      Speed
Dispersion
                                      Checkbk. volt mV : 3680
             1000s: (3.0)
  >
                                      Fuel delivery cm3/: 72.0...82.0
                                                   1000s: (69.0...85.0)
             1/min: 1000
3. Speed
Checkbk. volt mV : 3100
                                      Solenoid valve
Fuel delivery cm3/: 67.2...69.2
                                      Start of
                                      injection, volts : 12
             1000s: (66.2...70.2)
             cm^3/:2.0
Dispersion
                                      Stop test:
             1000s: (2.0)
                                                   1/min: 2100
                                      Speed
                                      Checkbk. volt mV : 3100
             1/min: 500
4. Speed
                                                   volts: 0
                                      ELAB
Checkbk. volt mV : 2660
                                      Fuel delivery cm3/: max. 3.0
Fuel delivery cm^3 /: 43.7...45.7
                                                   1000s:
             1000s: (42.7...46.7)
                                      max.
  >
             cm^3/:2.0
Dispersion
                                      Shutoff solenoid:
             1000s: (2.0)
                                      Cut-in voltage
                                      min.> volts
                                                         : 10.0
                                      Rated voltage,
                                                   volts: 12.0
```

Dimensions for mounting and setting:

:

Description

SVS max.

mm

mm

mm

mm

K

KF

FH

BOSCH INJECTION PUMP TEST SPECIFICATIONS	ELECTRICAL TEST
Obsereve notes in remark colum	Actuator Connections 5 and 6
Test sheet : VW Date of manufacture: Edition : 22.05.1996 Replaces :	Test temperature: 15°30°C, ohms : 0.41.0 50°70°C, ohms : 0.451.1
Replaces : Test oil : ISO 4113	Connections 5 and. ground, Mohms min.: 1.0
Injection pump : VE4/10E2075R650	Connections 6 and ground, Mohms min.: 1.0
Type No. : 0 460 404 984 Customer Ident.No.:	Connections 3 and 5 Mohms min. : 1.0 Connections 6 and 7
Customer-specific details Customer : VW	Mohms min. : 1.0
Engine : 1.9 TDI	High-pressure compressor sensor Sensor coils
Output kW : Speed 1/min:	Connections 1 and 2 Ohms : 4.96.5 Connections 2 and 3
TEST BENCH PREREQUISITES	Ohms : 4.96.5 Connections 1 and 3
Inlet pressure, bar: 0.300.40	Ohms : 9.813.0 Connections 1 and.
Calibrating nozzle- holder assembly > : 1 688 901 114	ground, Mohms min.: 1.0 Connections 2 and ground, Mohms min.: 1.0
Opening pressure > bar : 207210	Connections 3 and ground, Mohms min.: 1.0
Test pressure line: 1 680 750 085	Temperature sensor, fuel Connentions 4 and 7
Outer diameter : 6.00 x wall thickness > : 2.20 x length > mm : 350	Test temperature: 15°30°C, kohms : 1.24.0 50°70°C, kohms : 0.31.2
Overflow valve : 2 467 413 018	Connections 4 and ground, Mohms min.: 1.0
Test line : 0 986 612 444 (fuel-delivery actuator) :	Connections 7 and ground Mohms min. : 1.0
Test line : 1 687 011 208 (solenoid valve start of injection): (Test cable set)	Solenoid valve, start of injection Connections 1 and 2 Test temperature: 15°30°C, ohms: 14.317.3 50°70°C, ohms: 15.521.0
TEST PRECONDITIONS	Starting stop mV : 41204650
Test oil return temp. > °C with thermometer : 55	Shutoff stop mV : 650850
Test oil supply temperature > °C : 4247	
Hold-up revolutions >1/min: 1200 Feedback	
voltage mV : 2500	1

Timing device variations: Setting values of injection pump Check values in brackets 1st speed 1/min: 500 Checkbk. volt. mV : 2560 Supply pump pressure: Timing device 1/min: 500 Speed Checkbk. volt. travel : (9.2...11.2) : 2560 mm mV Setting value, bar: 8.4...9.2 2nd speed 1/min: 2050 Checkbk. volt. mV : 3890 Timing device travel: Timing device Speed 1/min: 500 : 11.8...12.8 travel mm Checkbk. volt : (11.5...13.1) mm : 2560 mV Setting value, mm : 10.1...10.3 1/min: 1500 3rd speed Checkbk. volt. mV : 1500 Full-load delivery: Timing device 1st temperature-conditioning : max. 0.5 mm travel 1/min: 2000 revolution : (max. 0.8)mm Checkbk. volt Solenoid valve : 2500 mV Start of Output injection, volts: 12 temperature °C : 61 1/min: 750 Speed 1/min: 300 4.th speed Checkbk. volt Checkbk. volt. mV : 2560 : 2480 mV Timing device Measuring : 5.2...9.2 travel temperature °C : 57 : (3.4...11.0) mm Fuel delivery cm3/ 1000s: 34.7...35.1 Overflow at overflow valve: $cm^3/: 2.5$ Dispersion 1000s: 1st temperature-conditioning revolution 1/min: 100 Test specifications of injection pump Checkbk. volt. mV : 2500 Check values in brackets Output temperature °C Supply pump pressure variations: : 51 1/min : 2050 Speed Checkbk. volt. mV : 3890 1st speed 1/min: 2050 Measuring Checkbk. volt temperature °C : 3890 mV : 138...194 Overflow Supply pump bar : 10.9...11.9 $cm^3/10s$: pressure > bar : 1/min: 300 2st speed Checkbk. volt : 2560 mV Supply pump bar : 6.6...8.0 pressure >

bar :

Fuel delivery variations:	Idle delivery:
	1st temperature-conditioning
1st temperature-conditioning	revolution 1/min: 2000
revolution 1/min: 100	Checkbk. volt mV : 2500
Checkbk. volt mV : 2500	Output
Output	temperature °C : 61
temperature °C : 51	Speed 1/min: 400 Checkbk. volt mV: 1800
Speed 1/min : 2050	Mestemperatur °C : 57
Checkbk. volt mV : 3890	Fuel delivery cm ³ /: 9.210.2
Meßtemperatur °C : 53	> 1000s: (6.712.7)
Fuel delivery cm ³ /: 49.551.9	Solenoid valve
> 1000s : (48.952.5)	Start of
Dispersion cm ³ / : 3.0 > 1000s.:	injection, volts : 12
/ 10005	Dispersion cm ³ /: 3.0
2nd temperature-conditioning	> 1000s: (4.0)
revolution 1/min : 2000	
Checkbk. volt mV : 2500	Starting fuel delivery:
Output	1st temperature-conditioning
temperature °C : 61	revolution 1/min : 2000
Speed 1/min: 750	Checkbk. volt mV : 2500
Checkbk. volt mV : 2480	Output
Measuring	temperature °C : 65
temperature °C : 57	Speed 1/min: 100
Fuel delivery cm3/:	Checkbk. volt mV : 2420
> 1000s: (33.636.2) Dispersion cm ³ /: > 1000s: (2.5)	Measuring
Dispersion cm ³ /:	temperature °C : 61
> 1000s: (2.5)	Fuel delivery cm ³ /: 35.745.7
	> 1000s: (32.748.7)
3rd temperature-conditioning	Solenoid valve
revolution 1/min: 2000	Start of injection, volts : 12
Checkbk. volt mV : 2500	injection, voits : 12
Output	Stan tost
temperature ·°C : 61	Stop test: Speed 1/min: 1000
Speed 1/min: 500 Checkbk. volt mV: 2560	Checkbk. volt mV : 4000
	ELAB volts: 0
Measuring temperature °C : 57	Fuel delivery cm ³ /:
Fuel delivery cm ³ /: 41.944.5	max. 1000s: 3.0
> 1000s : (41.245.2)	Start of
Dispersion cm ³ /: 3.0	
> 1000s:	Shutoff solenoid:
	Cut-in voltage
	min.> volts : 10.0
	Rated voltage,
	volts: 12.0
	Notes:
	High-pressure compressor sensor
	Testing only possible with ballast
	EPS 910
	Take note of test instructions
	"Distributor pump for direct injectors"!
	injectors":
·	Dimensions for mounting and setting:
	Description
	K mm : 3,63,8
	KF mm : 8,28,6
	SVS max. mm :
	FH mm :
	TS : 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST Actuator Obsereve notes in remark colum Connections 5 and 6 Test temperature: : VW Test sheet 15°...30°C, ohms : 0.4...1.0 Date of manufacture: 50°...70°C, ohms : 0.45...1.1 : 28.10.1996 Edition Replaces Connections 5 and. Test oil : ISO 4113 ground, Mohms min.: 1.0 Connections 6 and : VE4/10E2250R510-1 Injection pump ground, Mohms min.: 1.0 Connections 3 and 5 Type No. : 0 460 404 985 Mohms min. Customer Ident.No.: Connections 6 and 7 : 1.0 Mohms min. Customer-specific details Customer High-pressure compressor sensor Sensor coils : 1.9 TDI Engine Connections 1 and 2 : 4.9...6.5 Ohms Output kW Connections 2 and 3 1/min: Speed : 4.9...6.5 Ohms Connections 1 and 3 TEST BENCH PREREQUISITES : 9.8...13.0 Ohms Inlet pressure, bar: 0,30...0,40 Connections 1 and. ground, Mohms min.: 1.0 Calibrating nozzleholder assembly > : 1 688 901 114 Connections 2 and ground, Mohms min.: 1.0 Connections 3 and Opening ground, Mohms min.: 1.0 bar: 207...210 pressure > Test pressure line: 1 680 750 085 Temperature sensor, fuel Connentions 4 and 7 Test temperature: Outer diameter : 6,00 15°...30°C, kohms : 1.2...4.0 x wall thickness >: 2,20 50°...70°C, kohms : 0.3...1.2 > mm: 350 x length : 2 467 413 018 Connections 4 and Overflow valve ground, Mohms min.: 1.0 Connections 7 and : 0 986 612 439 Test line ground Mohms min. : 1.0 (fuel-delivery : (KDEP 1865/10) actuator) Solenoid valve, start of injection Connections 1 and 2 : 0 986 611 983 Test line Test temperature (solenoid valve 15°...30°C, ohms : 14.3...17.3 start of injection): (KDEP 1190) 50°...70°C, ohms : 15.5...21.0 TEST PRECONDITIONS Starting stop mV : 4120...4650 Test oil mV : 650...850 Shutoff stop return temp. > °C with thermometer : 55 Test oil supply temperature > °C : 42...47 Hold-up

revolutions >1/min: 1200

: 2500

Feedback

voltage mV

Setting values of injection pump Check values in brackets

Supply pump pressure:
Speed 1/min: 500

Checkbk. volt.

mV : 2245 Setting value, bar : 6.0...7.4

Timing device travel:
Speed 1/min: 500

Checkbk, volt

mV : 2245

Setting value, mm : 10.7...10.9

Full-load delivery:

1st temperature-conditioning

revolution 1/min: 2000

Checkbk. volt

mV : 2500

Output

temperature °C : 61 Speed 1/min: 750

Checkbk. volt

mV : 2480

Measuring

temperature °C : 57

Fuel delivery cm3/

> 1000s: 38.8...39.2

Dispersion cm³/: 2.5 > 1000s:

Test specifications of injection pump Check values in brackets

Supply pump pressure variations:

1st speed 1/min: 2000

Checkbk, volt

mV : 3890

Supply pump

pressure > bar : 8.2...9.6

> bar :

2st speed 1/min: 150

Checkbk. volt

mV : 2230

Supply pump

pressure > bar : min. 3.5

> bar :

Timing device variations:

1st speed 1/min: 500 Checkbk. volt. mV: 2245

Timing device

travel mm

> mm : (9.8...11.8)

2nd speed 1/min: 2000 Checkbk. volt. mV: 3890

Timing device

travel mm : 11.5...12.9 > mm : (11.4...13.0)

3rd speed 1/min: 1400 Checkbk. volt. mV: 1475

Timing device

travel mm : max. 0.5 mm : (max. 0.8)

Solenoid valve

Start of

injection, volts : 12

4.th speed 1/min: 300 Checkbk. volt. mV: 2245

Timing device

travel mm : 8.8...11.6 > mm : (8.6...11.8)

Overflow at overflow valve:

1st temperature-conditioning

revolution 1/min: 100 Checkbk. volt. mV: 2500

Output

temperature °C : 51 Speed 1/min : 2000 Checkbk. volt. mV : 3890

Measuring

temperature °C : 53

Overflow : 97...180 > cm³/10s : (83...194)

Fuel delivery variations:	Idle delivery: 1st temperature-conditioning
•	revolution 1/min: 2000
1st temperature-conditioning	
revolution 1/min: 100	Checkbk. volt mV : 2500
Checkbk. volt mV : 2500	Output
Output	temperature °C : 61
temperature °C : 51	Speed 1/min: 500
Speed 1/min: 2000	Checkbk. volt mV : 1600
Speed 1/min 2000	Meßtemperatur °C : 57
Checkbk. volt mV : 3890	mentemperatur C . 3/
Meßtemperatur °C : 53	Fuel delivery cm ³ /: 11.717.3
Fuel delivery cm^3 : 48.251.2	> 1000s: (11.517.5)
> 1000s : (47.951.5)	Solenoid valve
Dispersion cm ³ / : 2.5	Start of
> 1000s.: (2.5)	injection, volts : 12
2000011 (2007	Dispersion cm ³ /: 3,0
a a hamman andibianing	> 1000s: (4.0)
2nd temperature-conditioning) 1000S . (4.0)
revolution 1/min : 2000	
Checkbk. volt mV : 2500	Starting fuel delivery:
Output	1st temperature-conditioning
temperature °C : 60	revolution 1/min : 2000
Speed 1/min: 750	Checkbk. volt mV : 2500
Checkbk. volt mV : 2480	Output
	temperature °C : 65
Measuring	temperature to . 05
temperature °C : 56	Speed 1/min: 100
Fuel delivery cm3/:	Checkbk. volt mV : 2230
> 1000s: (37.740.3)	Measuring
Dispersion cm ³ /:	temperature °C : 61
> 1000s: (2.5)	Fuel delivery cm ³ /: 30.542.5
7 10003 . (2.3)	> 1000s: (28.544.5)
a a but the surface and all the same	Solenoid valve
3rd temperature-conditioning	
revolution 1/min: 2000	Start of
Checkbk. volt mV : 2500	injection, volts : 12
Output	
temperature °C : 61	Stop test:
Speed 1/min: 500	Speed 1/min: 750
Speed 1/min . 500	Checkbk. volt mV : 2480
Checkbk. volt mV : 2245	
Measuring	ELAB volts: 0
temperature °C : 57	Fuel delivery cm ³ /:
Fuel delivery $cm^3/: 36.839.8$	max. 1000s: 3.0
> 1000s: (36.040.6)	Start of
Dispersion cm ³ /: 3.0	
> 1000s: (3.0)	Shutoff solenoid:
7 10005 . (310)	Cut-in voltage
	min.> volts : 10,0
	, ·
	Rated voltage,
	volts: 12,0
	Notes:
·	High-pressure compressor sensor
	Testing only possible with ballast
	EPS 910
•	EFS 910
	Take note of test instructions
	"Distributor pump for direct
	injectors"!
	Dimensions for mounting and setting:
	Description
	_
	K mm :
	K mm : 5.86.2
	K mm : 5.86.2 SVS max. mm :
	K mm : 5.86.2 SVS max. mm : FH mm
	K mm : 5.86.2 SVS max. mm :

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST

Obsereve notes in remark colum	Actuator Connections 4 and 7
Test sheet : Chrysler	Test temperature:
Date of manufacture:	15°30°C, ohms : 0.41.0
Edition : 24.03.1997	50°70°C, ohms : 0.451.1
Edition : 24.03.1997 Replaces :	
Test oil : ISO 4113	Connections 4 and.
Turi a thi an annua an	ground, Mohms min.: 1.0
Injection pump : VE4/10E2100R635	
Thine No	ground, Mohms min.: 1.0
Type No. : 0 460 404 988 Customer Ident.No.:	Connections 2 and 7
customer Ident.No.:	Mohms min. : 1.0 Connections 4 and 6
Customor specific details	Mohms min. : 1.0
Customer-specific details	Monins min. : 1.0
Customer : Chrysler	High-proggues compressor consor
Engino	High-pressure compressor sensor Sensor coils
Engine :	
Out the later of	Connections 1 and 3 kohms : 4.96.5
Output kW :	
Speed 1/min:	Connections 2 and 3 kohms : 4.96.5
TEST BENCH PREREQUISITES	kohms : 4.96.5 Connections 1 and 2
TEST BENCH PREREQUISITES	kohms : 9.813.0
Inlet pressure, bar: 0.300.40	kohms : 9.813.0
inter pressure, bar: 0.300.40	Connections 1 and.
Calibrating nozzle-	ground, Mohms min. : 1.0
holder assembly > : 1 688 901 022	Connections 2 and
Horder desembly > 1 000 301 055	ground, Mohms min.: 1.0
Opening	Connections 3 and
pressure > bar: 130133	ground, Mohms min.: 1.0
pressure > par : 130133	ground, Monas min 1.0
Test pressure line: 1 680 750 073	Temperature sensor, fuel
rest pressure rane v a oct 750 ove	Connentions 5 and 6
Outer diameter : 6.00	Test temperature:
x wall thickness >: 2.00	15°30°C, kohms : 1.24.0
x length > mm: 450	50°70°C, kohms : 0.31.2
Overflow valve :	Connections 5 and
	ground, Mohms min.: 1.0
Test line : 0 986 612 442	Connections 6 and
(fuel-delivery actuator)	ground Mohms min. : 1.0
Test line : 1 687 011 208	Solenoid valve, start of injection
(solenoid valve	Connections 1 and 2
start of injection): (Test cable set)	
	15°30°C, ohms : 14.317.3
	50°70°C, ohms : 15.521.0
	Starting stop mV : 41204650
	Chut-66 -t
	Shutoff stop mV : 650850

Setting values of injection pump Check values in brackets

Supply pump pressure: Speed 1/min: 1000 Checkbk. volt.

mV : 3100

Setting value, bar: 6.8...7.4

Timing device travel: Speed 1/min: 1000

Checkbk. volt

mV : 3100

Setting value, mm : 6.9...7.1

Full-load delivery:

1/min: 1250 Speed

Checkbk. volt

mV : 3100

Fuel delivery cm3/

1000s: 30.1...30.5

 $cm^3/: 2.5$ Dispersion

1000s:

Test specifications of injection pump Check values in brackets

Supply pump pressure variations:

1st speed 1/min: 2100

Checkbk. volt

: 3100

Supply pump

pressure > bar : 8.2...9.0

> bar :

2st speed 1/min: 500

Checkbk. volt

mV : 3100

Supply pump

pressure > bar : 6.0...6.8

bar :

3st speed 1/min: 150

Checkbk. volt

: 3680

Supply pump

pressure > bar : min. 3.5

bar :

Timing device variations:

1st speed 1/min: 500 Checkbk. volt. mV : 3100

Timing device

: 5.3...6.7 travel mm : (5.0...7.0) mm

2nd speed 1/min: 1000 Checkbk. volt. mV : 3100

Timing device

travel mm

: (6.1...7.9) > mm

3rd speed 1/min: 1500 Checkbk. volt. mV : 1680

Timing device

: 0.0...0.5 travel mm : (0.0...1.5)mm

Solenoid valve

Start of

injection, volts: 12

Overflow at overflow valve:

Speed 1/min : 2100 Checkbk. volt. mV : 3100

: 56...167 Overflow

 $cm^3/10s$:

```
Idle delivery:
Fuel delivery variations:
                                                    1/min : 400
                                       Speed
1. Speed
              1/min: 2100
                                       Checkbk. volt mV : 2000
Fuel delivery cm<sup>3</sup>/: 12.0...14.2
Checkbk. volt mV : 3100
Fuel delivery cm<sup>3</sup>/: 64.0...66.0
                                                     1000s: (10.9...15.5)
             1000s : (63.0...67.0)
Dispersion cm<sup>3</sup>/ : 2.0
                                       Solenoid valve
                                       Start of
             1000s.:
                                       injection, volts : 12
                                       Dispersion
                                                     cm^3/:2.5
Speed
              1/min: 1250
                                                     1000s: (3.0)
Checkbk. volt mV : 2270
Fuel delivery cm3/:
                                       Starting fuel delivery:
              1000s: (29.0...31.6)
                                                    1/min : 100
              cm^3/:
                                       Speed
Dispersion
                                       Checkbk. volt mV : 3680
              1000s: (3.0)
   >
                                       Fuel delivery cm<sup>3</sup>/:
                                                     1000s: (72.0...82.0)
3. Speed
              1/min: 1000
                                          >
Checkbk. volt mV : 3100
                                       Solenoid valve
Fuel delivery cm<sup>3</sup>/: 67.2...69.2
                                       Start of
              1000s: (66.2...70.2)
                                       injection, volts : 12
              cm^3/:2.0
Dispersion
   >
              1000s:
                                       Stop test:
                                                     1/min: 2100
                                       Speed
              1/min: 500
                                       Checkbk. volt mV : 3100
4. Speed
Checkbk. volt mV : 2660
                                                     volts: 0
                                       ELAB
                                       Fuel delivery cm<sup>3</sup>/: 3.0
Fuel delivery cm^3 /: 43.7...45.7
                                                     1000s:
              1000s: (42.5...46.5)
                                       max.
              cm^3/:2.0
Dispersion
                                       Shutoff solenoid:
              1000s:
                                       Cut-in voltage
                                       min. > volts
                                                           : 10.0
                                       Rated voltage,
                                                     volts: 12.0
                                       Dimensions for mounting and setting:
```

Description

SVS max.

mm

mm

mm

mm

K

KF

FH

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST

Obsereve notes in remark colum

: Alfa Test sheet

Date of manufacture:

: 12.01.1994 Edition

Replaces

: ISO 4113 Test oil

Injection pump : VE4/10E2100L585

: 0 460 404 991 Type No.

Customer Ident.No.:

Customer-specific details Customer : ALFA

: 425 CHIEA Engine

Output kW 1/min: Speed

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-

holder assembly > : 1 688 901 022

Opening

pressure > bar: 130...133

Test pressure line: 1 680 750 073

Outer diameter : 6.00 x wall thickness >: 2.00 x length > mm: 450

Overflow valve

: 0 986 612 442 Test line (fuel-delivery actuator)

: 1 687 011 208 Test line

(solenoid valve

start of injection): (Test cable set)

Actuator Connections 4 and 7

Test temperature: 15°...30°C, ohms : 0.4...1.0

50°...70°C, ohms : 0.45...1.1

Connections 4 and.

ground, Mohms min.: 1.0

Connections 7 and ground, Mohms min.: 1.0

Connections 2 and 7

Mohms min.

Connections 4 and 6

Mohms min.

High-pressure compressor sensor

Sensor coils Connections 1 and 3

kohms : 4.9...6.5

Connections 2 and 3

kohms : 4.9...6.5

Connections 1 and 2

kohms : 9.8...13.0

Connections 1 and.

ground, Mohms min.: 1.0

Connections 2 and

ground, Mohms min.: 1.0

Connections 3 and

ground, Mohms min.: 1.0

Temperature sensor, fuel

Connentions 5 and 6

Test temperature:

15°...30°C, kohms : 1.2...4.0 50°...70°C, kohms : 0.3...1.2

Connections 5 and

ground, Mohms min.: 1.0

Connections 6 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature :

15°...30°C, ohms : 14.3...17.3 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

mV : 650...850 Shutoff stop

Setting values of injection pump Check values in brackets

Supply pump pressure:

Speed 1/min: 1000

Checkbk. volt.

mV : 3100

Setting value, bar: 6.8...7.4

Timing device travel:

1/min: 1000 Speed

Checkbk. volt

: 3100 mV

Setting value, mm : 6.9...7.1

Full-load delivery:

speed 1/min : 1250

Checkbk. volt

: 2270

Fuel delivery cm3/

1000s: 30.1...30.5

Dispersion $cm^3/: 2.0$

1000s:

Test specifications of injection pump Overflow at overflow valve: Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2100

Checkbk. volt

: 3100 mV

Supply pump

: 8.2...9.0 pressure > bar

bar

2st speed 1/min : 500

Checkbk. volt

mV : 3100

Supply pump

pressure > bar : 6.0...6.8

bar

3st speed 1/min : 150

Checkbk. volt

: 3680 mV

Supply pump

pressure > bar : min. 3.5

bar

Timing device variations:

1st speed 1/min: 500 Checkbk. volt. mV : 3100

Timing device

: (5.3...6.7) travel mm

: (5.0...7.0) mm

1/min: 1000 2nd speed Checkbk. volt. mV : 3100

Timing device

travel mm

: (6.1...7.9) mm >

1/min: 1500 3rd speed Checkbk. volt. mV : 1680

Timing device

: 0.0...0.5 travel mm

: (0.0...1.5) mm

Solenoid valve

Start of

injection, volts : 12

1/min : 2100 speed Checkbk. volt. mV : 3100

: 56...167 Overflow

 $cm^{3}/10s$:

```
Idle delivery:
Fuel delivery variations:
                                                  1/min : 400
                                      Speed
Speed
            1/min : 2100
                                      Checkbk. volt mV : 2000
Checkbk. volt mV : 3100
                                      Fuel delivery cm<sup>3</sup>/: 12.0...14.2
Fuel delivery cm<sup>3</sup>/: 64.0...66.0
                                                   1000s: (10.9...15.5)
            1000s : (63.0...67.0)
                                      Solenoid valve
Dispersion cm<sup>3</sup>/ : 2.0
                                      Start of
            1000s.:
   >
                                      injection, volts : 12
                                      Dispersion cm3/: 2.5
            1/min : 1250
Speed
                                                   1000s: (3.0)
Checkbk. volt mV : 2270
Fuel delivery cm3/:
                                      Starting fuel delivery:
             1000s: (29.0...31.6)
                                      Speed
                                                  1/min : 100
Dispersion
             cm^3/:
                                      Checkbk. volt mV : 3680
             1000s: (3.0)
  >
                                      Fuel delivery cm3/:
                                                   1000s: 72.0...82.0
            1/min : 1000
                                        >
Speed
Checkbk. volt mV : 3100
                                      Solenoid valve
Fuel delivery cm<sup>3</sup>/: 67.2...69.2
                                      Start of
             1000s: (66.2...70.2)
                                      injection, volts : 12
             cm^3/:2.0
Dispersion
                                      Stop test:
             1000s:
                                                   1/min: 2100
                                      Speed
                                      Checkbk. volt mV : 3100
            1/min : 500
Speed
                                                   volts: 0
Checkbk. volt mV : 2660
                                      ELAB
Fuel delivery cm<sup>3</sup>/: 43.7...45.7
                                      Fuel delivery cm3/:
                                                   1000s: 3.0
                                      max.
             1000s: (42.5...46.5)
             cm^3/:2.0
Dispersion
                                      Shutoff solenoid:
             1000s:
   >
                                      Cut-in voltage
                                      min. > volts
                                                         : 10.0
                                      Rated voltage,
                                                   volts: 12.0
                                      Dimensions for mounting and setting:
                                      Description
                                      KF
                                                 mm
                                                         :
```

SVS max.

FH

mm

mm

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL T	'EST
---	------

BOSCH INJECTION PUMP TEST SPECIFICATIONS	ELECTRICAL TEST
Obsereve notes in remark colum	Actuator Connections 4 and 7
Test sheet : Audi	Test temperature:
Date of manufacture:	15°30°C, ohms : 0.41.0
Edition : 21.04.1993	50°70°C, ohms : 0.451.1
Edition : 21.04.1993 Replaces :	
Test oil : ISO 4113	Connections 4 and.
	ground, Mohms min.: 1.0
Injection pump : VE4/10E2250R530	
	ground, Mohms min.: 1.0
Type No. : 0 460 404 992	Connections 3 and 4
Customer Ident.No.:	Mohms min. : 1.0 Connections 6 and 7
Customer-specific details	Mohms min. : 1.0
Customer : Audi	Monnes min 1.0
cascoller . waat	High-pressure compressor sensor
Engine : 1.9 TDI EDC	Sensor coils
	Connections 1 and 3
Output kW :	Ohms : 4.96.5
Speed 1/min:	Connections 2 and 3
	Ohms : 4.96.5
TEST BENCH PREREQUISITES	Connections 1 and 2
	Ohms : 9.813.0
Inlet pressure, bar: 0,300,40	
en libration manula	Connections 1 and. ground, Mohms min.: 1.0
Calibrating nozzle- holder assembly > : 1 688 901 114	Connections 2 and
noidel assembly > . 1 000 901 114	ground, Mohms min.: 1.0
Opening	Connections 3 and
pressure > bar : 207210	ground, Mohms min.: 1.0
	3-
Test pressure line: 1 680 750 085	Temperature sensor, fuel
	Connentions 5 and 6
Outer diameter : 6.00	Test temperature:
x wall thickness >: 2.20	15°30°C, kohms : 1.24.0
x length > mm: 350	50°70°C, kohms : 0.31.2
Overflow valve : 2 467 413 018	Connections 5 and
Overliow valve . 2 407 413 010	ground, Mohms min.: 1.0
Test line : 0 986 612 440	Connections 6 and
(fuel-delivery	ground Mohms min. : 1.0
actuator) : (KDEP 1865/10)	
	Solenoid valve, start of injection
Test line : 0 986 611 983	Connections 1 and 2
Solenoid valve	Test temperature :
start of injection): (KDEP 1190)	15°30°C, ohms : 14.317.3
MECH PREGONATETANS	50°70°C, ohms : 15.521.0
TEST PRECONDITIONS	Starting stop mV : 41204650
Test oil	pearering acob my , 4120,,,4000
return temp. > °C	Shutoff stop mV : 650850
with thermometer : 55	
•	
Test oil supply	
temperature > °C : 4247	
Hold-up	
revolutions >1/min: 1200	
Feedback	
voltage mV : 2500	

Timing device variations: Setting values of injection pump Check values in brackets 1/min: 500 1st speed Checkbk. volt. mV : 2245 Supply pump pressure: 1/min: 750 Timing device Speed Checkbk. volt. travel mm : (8.9...12.1) : 2480 mm mV Setting value, bar: 6.3...6.8 1/min: 2000 2nd speed Checkbk. volt. mV : 3890 Timing device travel: Timing device 1/min: 500 Speed : 11.6...12.8 travel mm Checkbk. volt : (11.4...13.0) mm mV : 2245 > Setting value, mm : 9.3...11.7 1/min: 1400 3rd speed Checkbk. volt. mV : 1475 Full-load delivery: 1st temperature-conditioning Timing device : max. 0.5 1/min : 2000 travel mm revolution mm : (max. 0.8)Checkbk. volt Solenoid valve mV : 2500 Start of Output temperature °C injection, volts: 12 : 61 1/min: 750 Speed 4.th speed 1/min: 300 Checkbk. volt Checkbk. volt. mV : 2245 : 2480 mV Timing device Measuring : 9.3...11.7 temperature °C travel mm : 57 : (8.9...12.1) mm Fuel delivery cm3/ 1000s: 38.8...39.2 5.th speed 1/min: 150 $cm^3/:2.5$ Dispersion Checkbk. volt. mV : 2230 1000s: > Timing device : min. 1.5 Test specifications of injection pump travel mm Check values in brackets mem : Supply pump pressure variations: Overflow at overflow valve: 1/min: 2000 1st speed 1st temperature-conditioning Checkbk. volt revolution 1/min: 100 : 3890 mV Checkbk. volt. mV : 2500 Supply pump Output bar : 8.6...9.6 pressure > temperature °C : 51 bar 1/min : 2000 Checkbk. volt. mV : 3890 1/min: 500 2st speed Measuring Checkbk. volt temperature °C : 53 : 2245 : 83...167 Overflow Supply pump $cm^3/10s$: bar : 6.2...7.2 pressure > bar : 3st speed 1/min: 150 Checkbk. volt : 2230 mV Supply pump pressure > bar : min. 3.5 bar : >

Fuel delivery varia	at	ions:	Idle delivery:		
1st temperature-conditioning			1st temperature-conditioning		
revolution 1/min	:	100	revolution 1/min:		
Checkbk. volt mV			Checkbk. volt mV :	2500	
Output			Output		
temperature °C		51		61	
Speed 1/min			Speed 1/min:	500	
Checkbk. volt mV	:	3890	Checkbk. volt mV : Meßtemperatur °C :	1600	
Meßtemperatur °C	:	53	MeBtemperatur °C :	57	
Fuel delivery cm ³ /	:	48.451.0	Fuel delivery cm3/:		
> 1000s	:	(47.951.5)	1	(11.017.0)	
Dispersion cm ³ /			Solenoid valve		
> 1000s.	:	(2.5)	Start of		
			injection, volts :	12	
2nd temperature-com	nd	itioning	Dispersion cm ³ /:	4.0	
revolution 1/min	:	2000	> 1000s:	(4.0)	
Checkbk. volt mV	:	2500			
Output			Starting fuel delive	ery:	
temperature °C	:	61		-	
Speed 1/min			1st temperature-cond	litioning	
Checkbk. volt mV			revolution 1/min :		
Measuring			Checkbk. volt my :		
temperature °C	:	57	Output		
Fuel delivery cm ³ /				65	
		(37.740.3)	Speed 1/min:		
Dispersion cm ³ /		(371,1111015)	Checkbk. volt mV :	2230	
		(2.5)	Measuring		
> 10005	•	(2.3)	temperature °C :	61	
3rd temperature-con	- 4	itioning	Fuel delivery cm ³ /:		
			> 1000s:	(30.446.4)	
revolution 1/min				(30.446.4)	
Checkbk. volt mV	•	2500	Solenoid valve		
Output	_	61	Start of	1.3	
temperature °C			injection, volts :	12	
Speed 1/min			at an at a star		
Checkbk. volt mV	:	2245	Stop test:		
Measuring					
temperature °C			Speed 1/min:		
Fuel delivery cm ³ /			Checkbk. volt mV :		
		(35.940.5)	ELAB volts:		
Dispersion cm ³ /			Fuel delivery cm3/:		
> 1000s	:	(3.0)	max. 1000s:	3.0	
Shutoff solenoid:					
			Cut-in voltage		
				10.0	
			Rated voltage,		
			volts:	12.0	

Notes:

High-pressure compressor sensor Testing only possible with ballast EPS 910

Take note of test instructions "Distributor pump for direct injectors"!

Dimensions for mounting and setting:

Description

K mm : 3.6...3.8 KF mm : 5.8...6.2

SVS max. mm

FH mm:

TS : 1 467 010 376

1

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps

WPP 001/4 MB 5.7 I

and Governors

En

Edition 5.72

PES 6 A 80 C 410 (D)	RS 2085	RSV 575-1100 A7B 533 D RSV 300- 900 A7B 528 RSV 575-1250 A1B 533 D	(1) (2) (3)	supersedes: company: engine:	6.70 Daimler-Benz OM 352
		RSV 300-1500 A2B 439 D RSV 300-1100 A2B 439 D RSV 600-1100 A4B 439 D		Mähdrescher: Aggregat: Mähdrescher:	108 PS (1) 75 PS (2) 118 PS (3)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2.15 + 0.1mm (from BDC) Port closing at prestroke Spring pre-tensioning Rotational speed Control rod Fuel delivery Difference Control rod Fuel delivery (torque-control valve) travel travel cm³/ mm 100 strokes cm3/100 strokes mm cm3/100 strokes rev/min mm 1000 2.2 - 3.06 0.4 5.5 - 6.011.5 - 12.8 15 200

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RSV 575 - 1100 A7B 533 D (1)

Upper rated speed				Intermediate i	Intermediate rated speed			l speed		Sliding sleeve travel Torque-control travel		
	Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm (1) rev/min (5)	Degree of deflection of control lever	rev/ min 5	Control rod travel mm	Degree of deflection of control lever	rev/ min 8	Control rod travel mm (4)	rev/min	control rod travel 3	
	ca. 56.5	1100 1100 1120	12.0 7.0 2.4	without a	uxilian	y spring	ca. 25	575 200 575	5.0 19 - 21 4.7 - 5.3	1080	0	
	ca. 56	1100 1130 1180	8.2 - 9.4 3.0 - 4.4 0 - 1	with au	xiliary	spring		600 660	2.8 - 4.0 0 - 1	900 650	0.1 - 0.3 0.3 - 0.5	

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load deliv Control-rod si		Rotational-speed Fuel delivery characteristics		•	Starting fuel delivery idle			Intermediate rotational speed 59		
Test oil temp. ()°		4	•		(3) switching point		Torque-control travel			
min ⁻¹	cm³/1000 Hübe	min ⁻¹	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes mm RW	rev/min	mm RW		
1	2	3	4	5	6	7	8			
(20°) 1080	56.5 - 58.5	1100 *	800 500	54.0 - 57.0 49.0 - 52.0	100	13.2 – 13.8	575	5.0		
(40°) 1060	56.0 – 57.0		800 500	52.5 - 55.5 48.0 - 51.0						
								J.		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.75

BOSCH

Upper rated speed			Intermediat	diate rated speed		Lower rated speed				Sliding sleeve travel ③		
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel ① mm rev/min ⑤	Degree of deflection of control lever	rev/min	Control rod travei mm	Degree of deflection of control lever	rev/ min 8	Contro travel mm	ol rod	rev/min 10	Control rod travel mm	
ca. 49.5	900 920 930	16.0 9.6 4.8	without a	without auxiliary spring								
ca. 48	900 920 950	7.5 - 8.0 2.4 - 3.7 0 - 1	with aux	with auxiliary spring								

RSV 575-1	250 A1E	533 D	(3)					
ca. 62	1250	16.0						
	1280	11.8	without auxiliary spring	ca. 28	575	5.5	1230	0
la la	1320	5.0			200	19 – 21		
ca. 60	1250	ca. 8.5	1		575	5.2 - 5.8	650	0.3 - 0.5
	1295	ca. 3.0	with auxiliary spring			2.0 – 3.6		
	1350	0 – 1			700	0 - 1		

RSV 300-1500 A2B 439 D ca. 22 300 7.5 ca. 60 1500 16.0 Festoil-ISO 4113 without auxiliary spring 150 19-21 1550 12.2 300 7.2 - 7.81610 7.0 4.7 - 6.6400 1600 6.2 - 9.0500 3.1 - 5.4with auxiliary spring 1700 1.6 - 2.3800 0 - 1 1820 0 - 1RSV 300-1100 A2B 439 D

K2 A 200-1	100 AZE	3 439 0						
ca. 43	1100	16.0		ca. 19	300	7.5	1080	0
	1150	12.0	without auxiliary spring		150	19 – 21		
	1190	8.0		İ	300	7.2 – 7.8	800	0 – 0.2
	1180	7.2 - 10.0				3.1 – 5.2		
	1250	4.2 - 6.1	with auxiliary spring		760	0-1	450	0 - 0.2
	1440	0-1			<u></u>			<u> </u>

J	RSV 600-1	100 A4E	3 439 D						
	ca. 72	1100	16.0		ca. 44	600	7.5	1080	0
		1150	11.0	without auxiliary spring		100	19 – 21	1000	0.1 - 0.3
		1180	6.8			600	7.2 - 7.8	900	0.5 - 0.7
		1180	5.8 - 8.0			700	3.3 - 5.2	600	0.7 - 0.9
		1200	1.1 - 4.0	with auxiliary spring		850	0-1		
		1320	0 - 1						

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load deliv Control-rod si Test oil temp	top	Rotational-speed limitation intermediate speed	Fuel delive high idle speed	ery characteristics	Starting f idle switching	uel delivery point	Torque-c travel	ontrol Control rod I travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
(20°) 880 (2)	48.5 – 50.5	900 *			100	13.2 – 13.8		
(40°) 880	48.0 – 50.0				ļ			ļ
(3) (40°) 1230	55.5 – 57.5	1290 – 1300 3 mm RW	800 500	52.5 - 55.5 48.0 - 51.0	100	13.2 – 13.8		

Checking values in brackets

*1 mm less control rod travel than col. 2

1480

1200

400

0

0.7 - 0.9

0.9 - 1.1